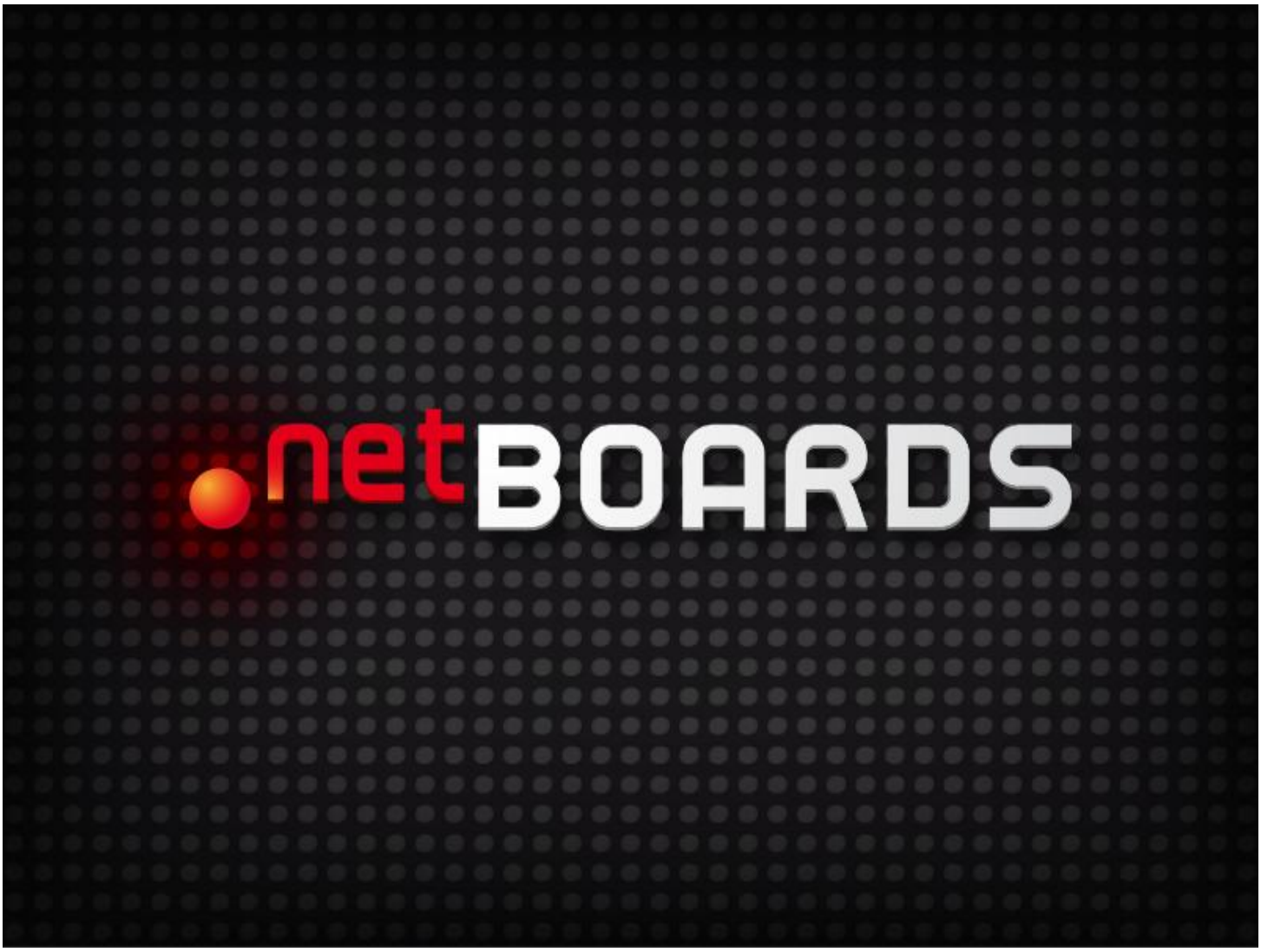
MICROGATE
TIMING AND SPORT



User manual

Version 1.0.0

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Introduction

.netBoards (the successor of MicroBoard) is a Microgate software solution for managing MicroTab and MicroGraph (LED and Pixel) display boards via PC.

Developed with the most recent software technologies and featuring a modern graphical user interface, .netBoards has the following features:

- ***Layout Designer***: for graphical management of various items, such as texts, running text, images, dates, times, positioning them (with single-pixel or LED precision) on a virtual display board before sending them to the real display board. Simple and fast configuration of general parameters and programs (e.g. line and column addresses, parameters for serial/Ethernet/Wi-Fi/radio connection, brightness settings, internal clock setting, etc.).
- ***Sequence Editor:*** for creating various layouts (e.g. alternating advertisements and ranking or timing information) and sending them sequentially at predefined intervals and with loop/goto functions.
- ***Program Editor:*** for easily and rapidly creating programs, which can run on the display boards with no need for a PC connection.

Figure 1 - .netBoards GUI

A further possibility offered by the software is to act as a '**simulator**' collecting data from devices such as timers, photo-finish, other PCs with race management programs or any other device 'communicating' with the Microgate protocol.

In this case, .netBoards becomes a 'server' receiving dynamic information from several sources (**Data Sources**); after a possible preview (*Preview Module*) or in 'pass-through' mode data can be sent to the display board with the 'static' items on the layout.

Figure 2 - various Data Sources connected with .netBoards

Thanks to a series of additional plug-ins developed especially for specific sports or requirements (e.g. hockey, basketball, volleyball, etc.), **.netBoards** can be used as a **sports event management tool** allowing the timer or referee to interact with preconfigured objects such as scores, penalty countdowns, timers, as well as fix information such as names of teams, athletes, etc.

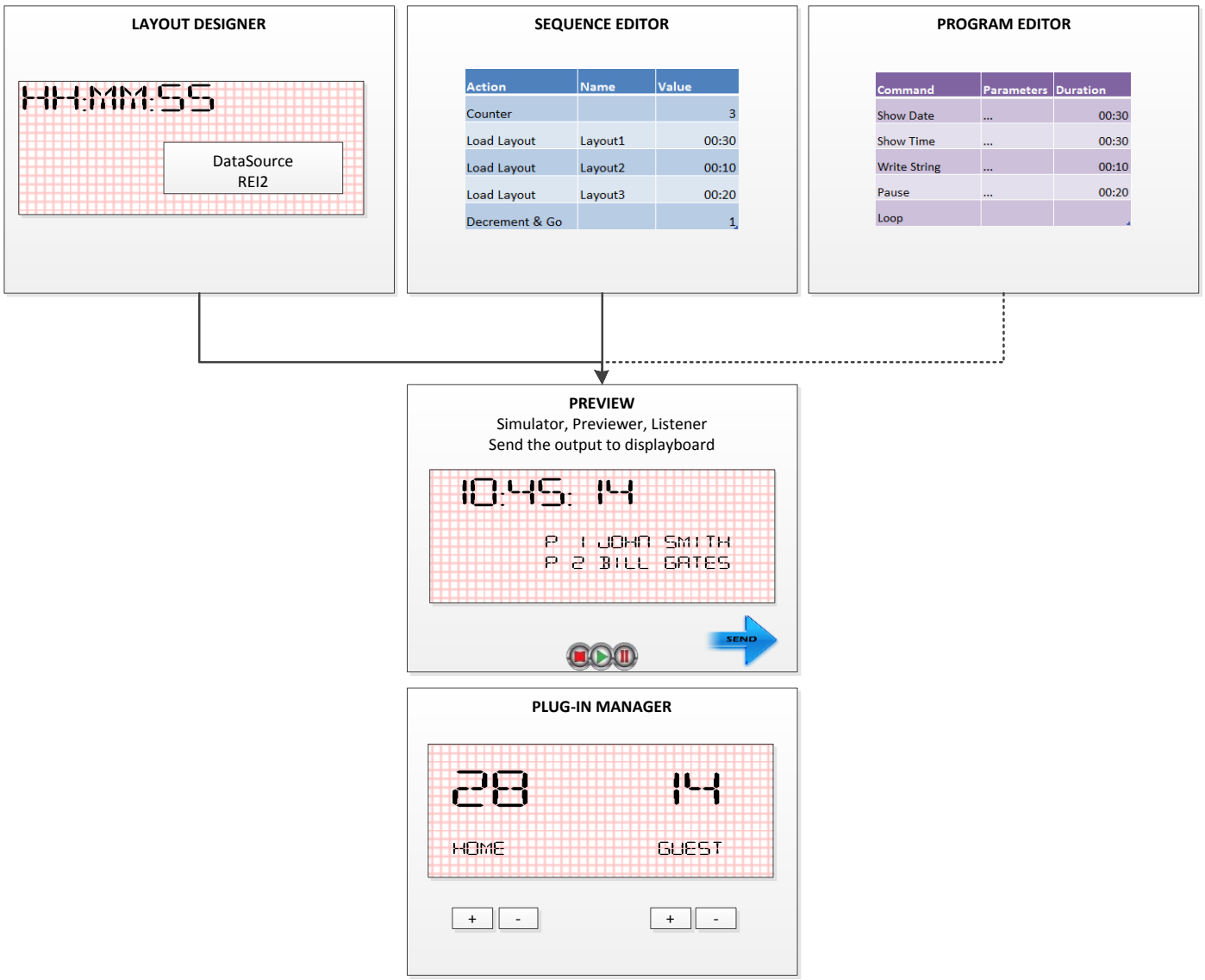


Figure 3 - Available modules and architecture

Suggested Minimum Hardware and Software Requirements

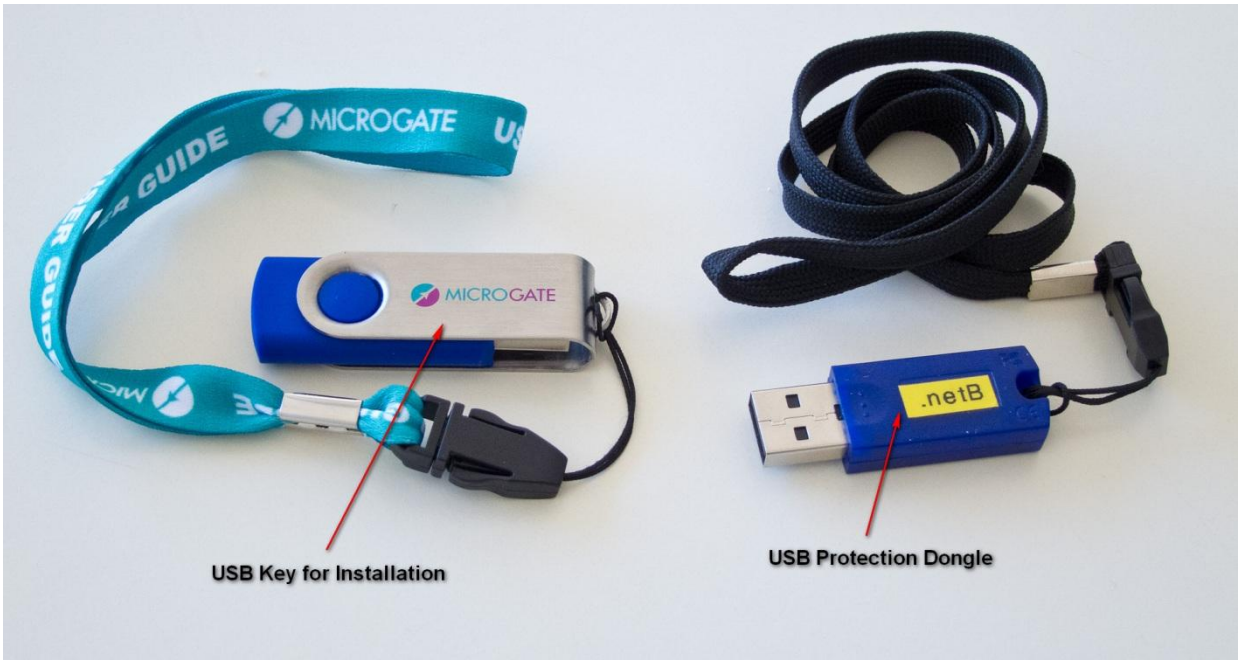
	Minimum	Suggested
Operating System	Microsoft XP SP3	Vista/7 (32 or 64 bit)
	.Net Framework 4.0 (installed by the application if missing)	
Ram	1Gb	2 Gb
Hard Disk	40 Gb	120 Gb
Graphic Display Resolution	1024x768	1280x800 or higher
Ports	1 USB (for USB-to-SERIAL converter) and/or 1 Ethernet or Wi-Fi port	
Display Boards	LED or PIX MicroGraph or MicroTab display boards (MicroTab Light, RadioSpeed, LapCounter or other not specified display boards are not supported)	

Table 1 - Suggested and minimum hardware/software requirements

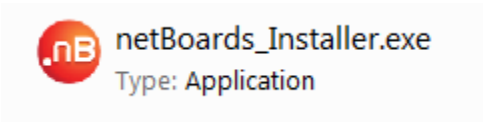
Installation

Insert the USB Dongle (protection dongle with black strap and yellow label) into a free USB port. The key allows the software to run and must be inserted each time the program is used.

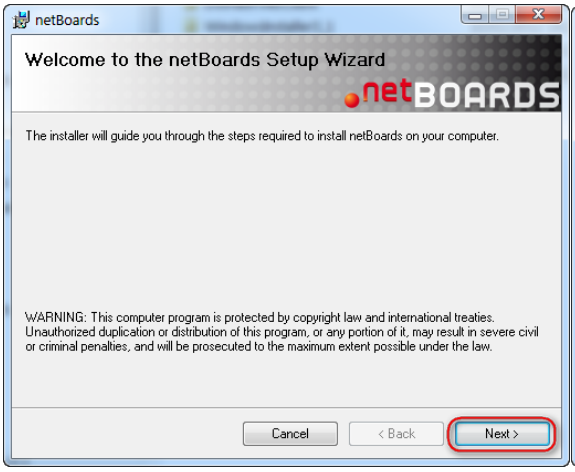
Insert the USB key containing all Microgate software and manuals (with green strap and the writing Microgate User Guide) into another USB port and browse to the folder Software > netBoards.

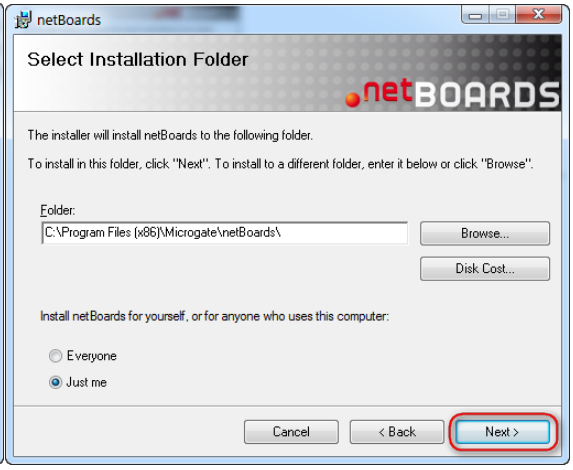


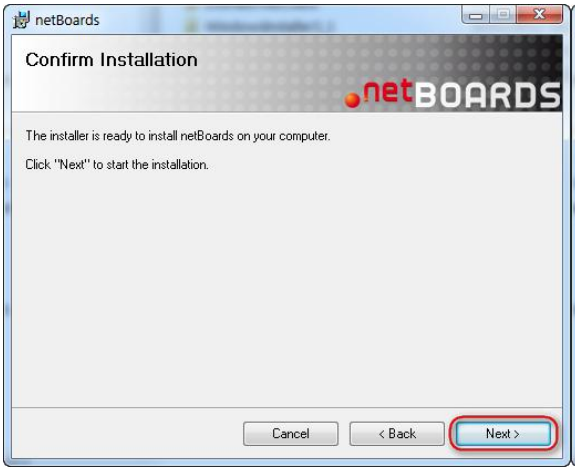
Launch netBoards_Installer.exe

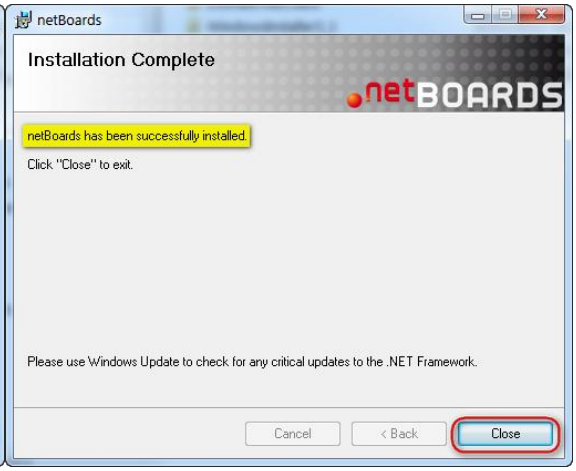


After unpacking, press the Next > button


netBoards
Welcome to the netBoards Setup Wizard
The installer will guide you through the steps required to install netBoards on your computer.
WARNING: This computer program is protected by copyright law and international treaties. Unauthorized duplication or distribution of this program, or any portion of it, may result in severe civil or criminal penalties, and will be prosecuted to the maximum extent possible under the law.
Cancel
< Back
Next >

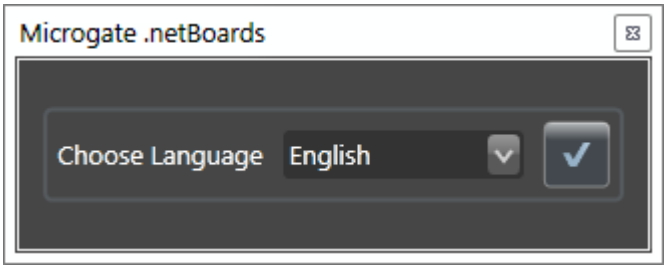

netBoards
Select Installation Folder
The installer will install netBoards to the following folder.
To install in this folder, click "Next". To install to a different folder, enter it below or click "Browse".
Folder:
C:\Program Files (x86)\Microgate\netBoards\
Browse...
Disk Cost...
Install netBoards for yourself, or for anyone who uses this computer:
Everyone
Just me
Cancel
< Back
Next >


netBoards
Confirm Installation
The installer is ready to install netBoards on your computer.
Click "Next" to start the installation.
Cancel
< Back
Next >



After installation, the software creates a desktop icon. Run the Software.

Here the user is asked to choose the language:



Choose your language from the dropdown menu and press the button for confirmation.

General Information and Nomenclature

Layout A Layout is the virtual representation of a display board in single or multiple configurations. Each layout has a basic configuration identifying its type (Microraph/MicroTab), technology (LED or Pixel), and parameters for connection with the real display board. Via the *Layout Designer* module a series of graphical items, called *primitives*, can be positioned with single-dot precision (LED or pixel) or configuration *commands* can be transmitted to the display board.

Primitive Graphical item which can be positioned on a layout, such as strings, images, running texts, date, time, etc. Each primitive has a number of *Properties* which can be configured from a control panel. Some of these properties are generic and available for all primitives (origin coordinates, fonts, alignment, etc.), whereas others are specific for each item. The primitives are divided into 'static' (such as strings, bitmap images, etc.) and 'dynamic' (clocks, data sources, plug-ins).

Command Information or settings to send to the display board for a particular configuration. Examples of commands are time and date, (serial, Ethernet, Wi-Fi, radio) connection parameters, and brightness settings for LED display boards, as well as resets, etc.

Sequence It is possible to create a sequence of previously created and saved layouts and transmit them to the display board in a given sequence and at predefined display times. This allows to create sequences of views (information, ads, logos, ranking lists, etc.) alternating at user-configurable times and cycles.

Program All Microgate display boards can store internally various commands to execute in sequence with pauses, in cycles and with skips defined by the user (Program 2 - 'internal program'). The Program Editor module allows to create these programs and to send them to the display board, which will then display them with no need for a PC connection (but which is necessary for the sequences described above).

Project A .netBoards project is a Windows folder, where the *.layout*, *.sequence*, and *.program* files containing the information created with the 3 modules are stored.

Data Source This is a particular kind of primitive representing a data source such as a timer, a photo finish, a competition management software or any other hardware/software device communicating using the Microgate display board protocol. A Data Source positioned on the Layout allows to verify the data fed in by an external device and forward them to the real display board adding static information.

Plug-In These are particular types of primitives which have a configuration panel but also a series of elements (buttons, input text boxes), which allow to control everything in preview mode. An example is the 'Score' Plug-in, which is a number increased or decreased by pressing + or - very easily and rapidly, for instance by a referee or a timer.

Preview The Preview environment is a window displayed separately from the main window and showing the Layout or the Sequence as it will be shown on the display board. If, for example, a clock is positioned on a Layout, it is represented by a 'placeholder' such as HH:MM:SS. On the preview screen the clock is actually displayed with its running time, just like on the display board. Similar to a Data Source represented only by a rectangle on the Layout Designer, in the Preview Window in Run mode, the data of the connected device are actually shown. The Preview environment also allows to interact with Plug-in objects having buttons or other controls and sending their content directly to the display board.

Elements of the Graphical User Interface

Taking a look at the image below, the following main elements can be seen:

Main Menu — Containing the most important commands for managing a project, adding items, and launching the preview window.

Project Contents — Allows to switch between the three modules (Layout Designer, Sequence Editor, Program Editor) and to open previously saved files.

Main Window — Depending on the module, this shows the central part of the program with the core characteristics of the context (e.g. the layout primitives, or the sequence information, as well as the commands of an internal program). In the Layout Designer this area is called ***Virtual Board***.

Configuration Panel — The primitives and the commands (as well as the layouts, sequences, and programs) can be configured via configuration panels that open when an item is selected. When a property is changed, the element is automatically updated (without the need to confirm).

Toolbar — At the bottom there is a toolbar with commands for positioning primitives, plug-ins, commands, etc. in the current module. It is enough to click on a toolbar element to add the element to the context. The toolbar can be scrolled from left to right if a low PC resolution does not allow to view all elements on the screen.

Other Elements

Commands Ok|Cancel

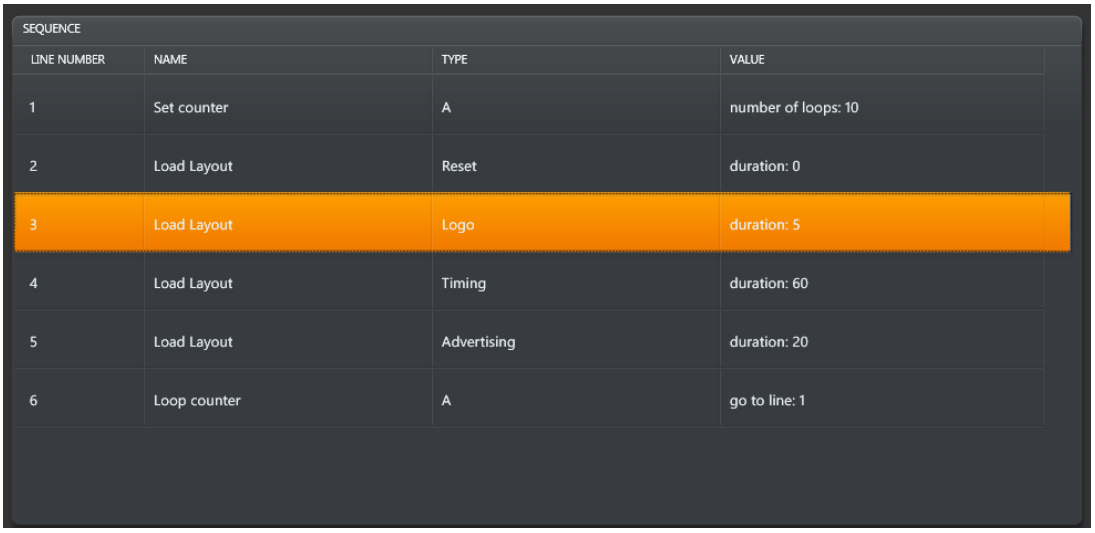
In certain situations (e.g. when sending commands) two buttons are displayed with the following icons . The two buttons are average OK and CANCEL buttons, i.e. the former confirms the execution of the command, whereas the latter cancels the operation closing its panel.

Settings Button

The main Layout or Program parameters can be changed pressing this button , which opens the relevant configuration panel substituting any previously opened primitive/command panel.

Item Lists

The Sequence Editor and Program Editor modules feature *Item Lists*, i.e. lists of items that can be managed, moved, deleted, etc. The 'current item' (or selected item) is the one selected and highlighted in orange.



Preview Commands

In the Preview window it there is a series of commands for controlling the Layout or Sequence flow:

- **Play/Pause**
- **Stop**
- **Send**

Zoom Palette

In the Layout Designer and in Preview the window content can be zoomed using the dedicated slider.
Move the slider (vertical cursor) to increase or decrease the size of the main window content (the same operation can be performed pressing the CTRL button and moving the mouse wheel).
The <Fill> button optimizes (maximizes) the size of the main window and the monitor, as well as the set resolution. The button 1:1 increases to a single pixel for precise moving.

General Settings

From the main menu press the <settings> button, which opens the corresponding panel:

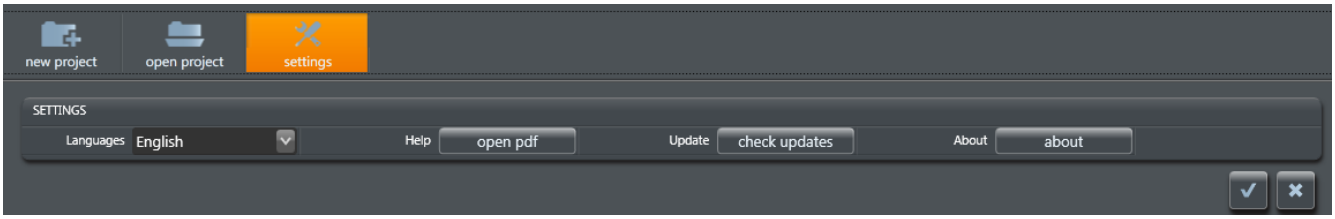


Figure 4 – General settings panel

The following options are available.

Languages

Choose the desired language among those available from the drop-down menu and confirm pressing OK. Close the application (SAVING data which have not yet been stored, if necessary) and launch it again to apply the new language settings.

Help

Press the <open pdf> button to launch Acrobat Reader (or a similar pdf reader), and open the document.

Update

When starting (only once per day), the software checks via Internet if a more recent version is available and if so, downloads the update and installs it. This operation can be carried out on demand when needed, by clicking the <check updates> button. Of course the computer must be connected to the Internet (an error message is displayed if no connection is available or in the event of problems connecting to our server).

About

Displays the typical information window with the currently installed version (useful for technical support).

Project Management

A *project* is a container of layouts, sequences, and programs. It has a name (which is highlighted at the top in the title bar) and is associated with a folder on your hard disk, on a shared network drive, or on any other mass storage device (USB key, external disk, etc.).

Each user can choose freely how to manage the project. It is possible (although not recommended) to use one big project and save all files there, or for instance create an associated project for each competition (e.g. 'World Cup Competition XY', 'Horse Riding Competition YZ')

When new items are created inside a project, they are saved in the chosen folder and can be opened and retrieved using the option 'project content'. The items in the drop-down menus have a corresponding file in the folder.

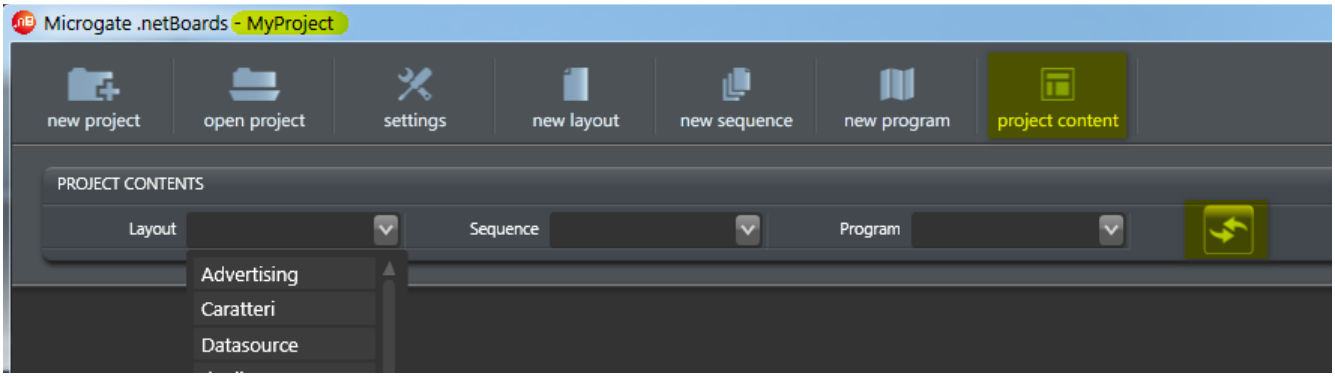


Figure 5 - Project content

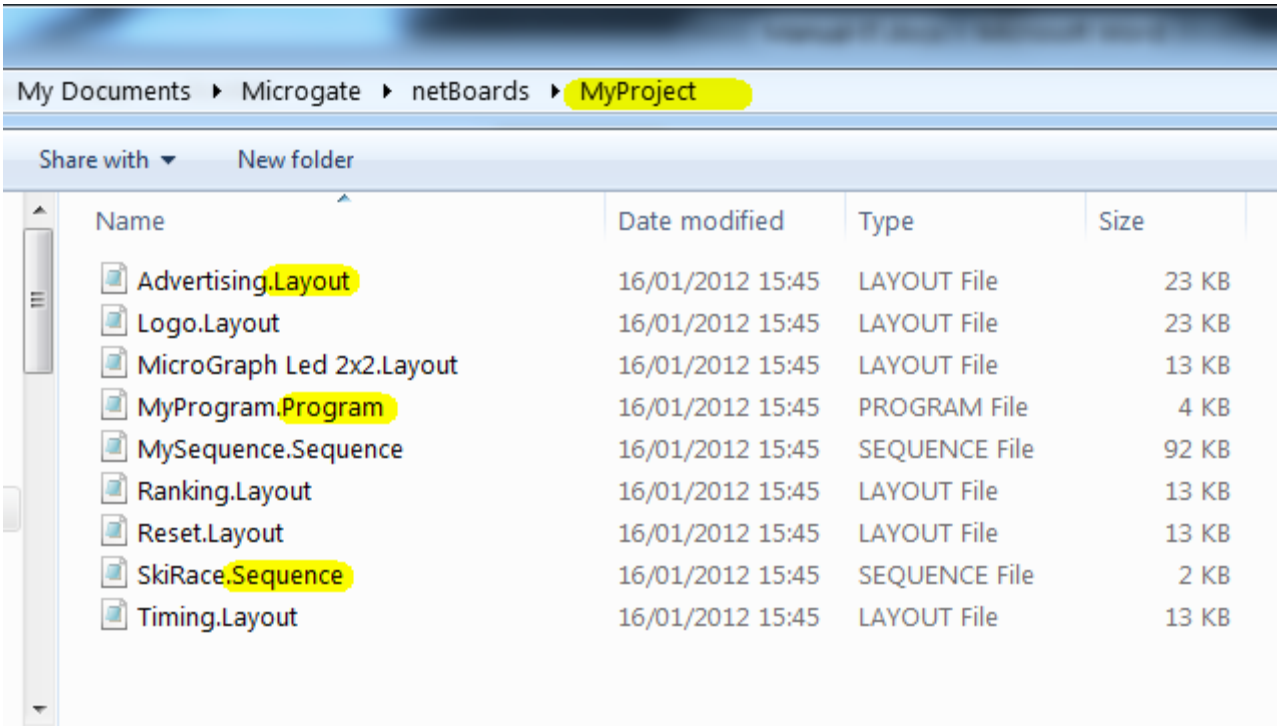

My Documents ▸ Microgate ▸ netBoards ▸ MyProject
Share with
New folder
Name
Date modified
Type
Size
Advertising.Layout 16/01/2012 15:45 LAYOUT File 23 KB
Logo.Layout 16/01/2012 15:45 LAYOUT File 23 KB
MicroGraph Led 2x2.Layout 16/01/2012 15:45 LAYOUT File 13 KB
MyProgram.Program 16/01/2012 15:45 PROGRAM File 4 KB
MySequence.Sequence 16/01/2012 15:45 SEQUENCE File 92 KB
Ranking.Layout 16/01/2012 15:45 LAYOUT File 13 KB
Reset.Layout 16/01/2012 15:45 LAYOUT File 13 KB
SkiRace.Sequence 16/01/2012 15:45 SEQUENCE File 2 KB
Timing.Layout 16/01/2012 15:45 LAYOUT File 13 KB

Figure 6 - The project folder named 'MyProject' containing various items

Creating a New Project

Creating a new project means instructing the software in which folder the project items must be stored. Press the <new project> button and select an empty folder previously created or create it on the fly using the <Make New Folder> button.

The folder can be saved anywhere on the hard disk, even though it is recommended to group all projects in one path (e.g. C:\netBoards or in the Documents folder).

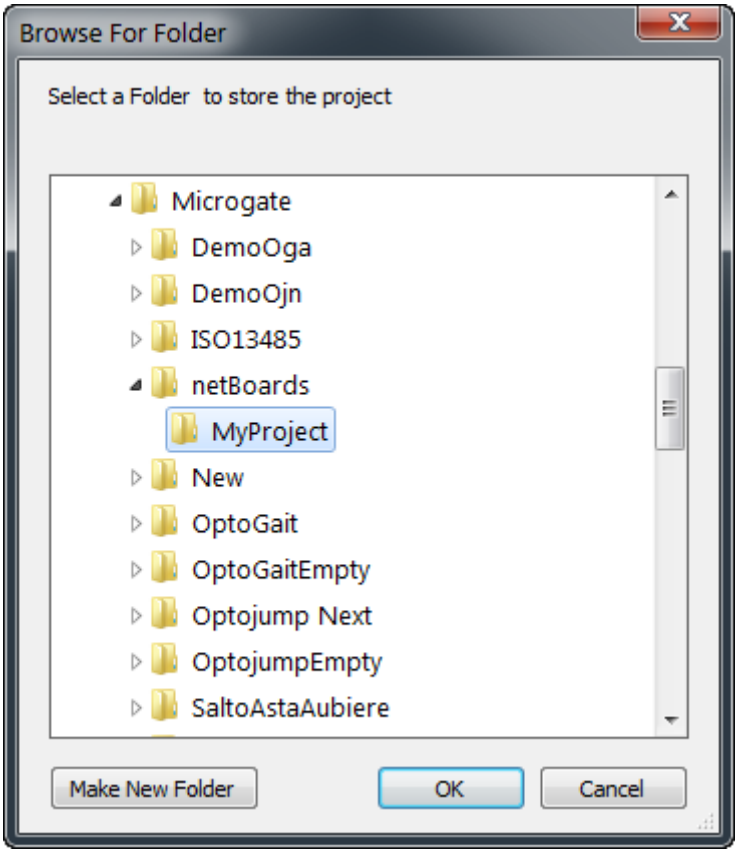


Figure 7– Creation of a new project/folder

If an existing folder containing stored items is chosen, the program displays the following dialog box:

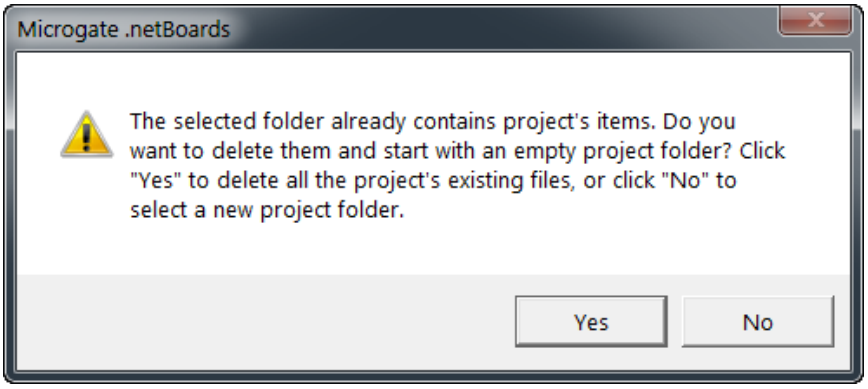

Microgate .netBoards
The selected folder already contains project's items. Do you want to delete them and start with an empty project folder? Click "Yes" to delete all the project's existing files, or click "No" to select a new project folder.
Yes
No

Figure 8 - Confirmation of project overwriting

Press <Yes> or <No> to overwrite or not the existing project.

Opening an Existing Project

Press the <open project> button and in the dialog box choose the folder associated to the project. The Project Contents panel is automatically displayed, where the element to edit can be chosen. NB: An element is a layout, sequence or program.

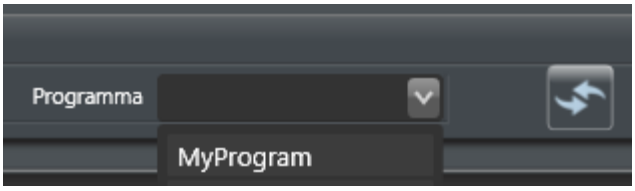
If a folder that does not contain .netBoards files is chosen by mistake, the 'Project Contents' icon is not displayed, so the user realizes that he has probably chosen the wrong folder.

Copying an Entire Project or Single Elements

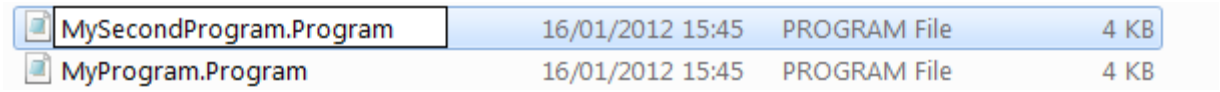
In order to copy an existing project (for instance a template project created as a basis template) it is sufficient to copy the associated folder using Windows Explorer (there is no configuration file or registry setting except for the project folder).

Similarly, in order to duplicate a layout, a sequence, or a program within a project, it is enough to copy the source file and rename it (maintaining the same extension). If the project you are editing is the current one (i.e. the project has been opened inside the .netBoards program) in order to display the new element in the Project Contents drop-down menu, you must press the refresh button to rescan the folder.

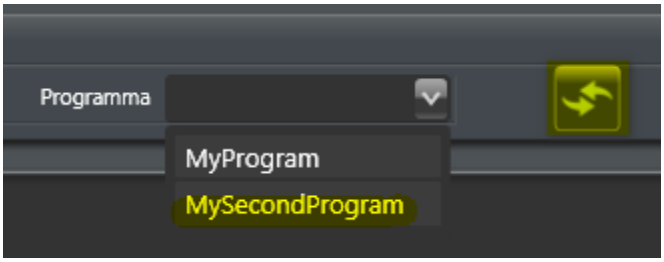
e.g.: You want to copy the existing program called 'MyProgram' into 'MySecondProgram'.



Open the project folder using Windows Explorer and copy the file 'Myprogram.program'.



Go back to .netBoards, press the <refresh> button and the new program is ready.



Deleting or Renaming a Project or Associated Elements

Similarly to copying, when renaming or deleting an entire project or one of the contained elements, it is sufficient to work in the File System (Windows Explorer).

To apply the executed operations to the program, click on the <refresh> icon to refresh the available drop-down menus each time.

NOTICE: The currently open project or element cannot be deleted or renamed. Close the project, open another project or close the program by clicking on the X in the top right corner.

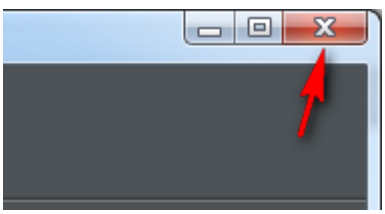
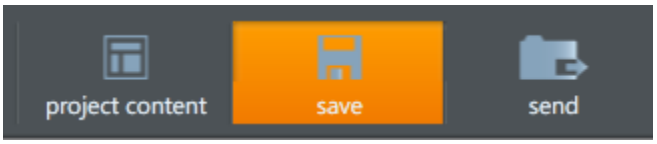


Figure 9 - Icon for closing the program

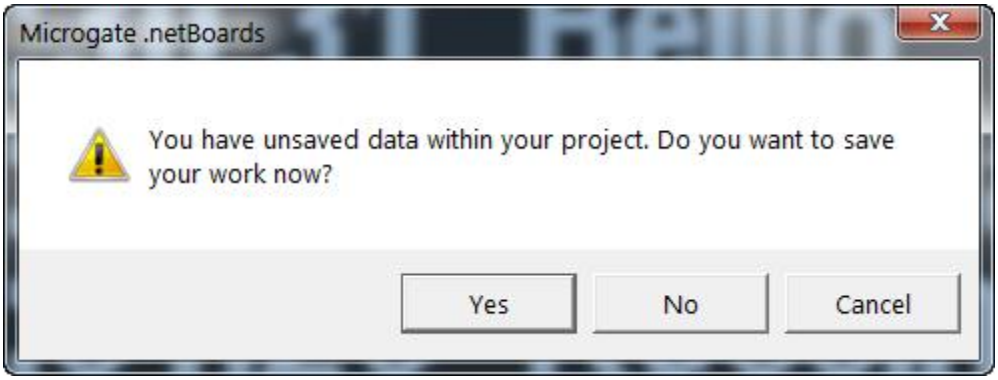
Saving Elements

When creating elements and editing them, it is recommended - just like in any other software - to periodically SAVE your work on your hard disk.

Just press the <save> button and all elements which haven't been stored yet, will be saved.



If you close the program or try to open (or create) a new project and there are elements which have not been saved yet, the program displays the following dialog box:



Pressing <Yes> the project is saved and the requested operation is carried out; pressing <No> the project is NOT saved, whereas pressing <Cancel> the operation is canceled.

CAUTION: To prevent data loss, **it is recommended to save periodically** and any time you make important changes!

Layout Designer

This is the main module of the software that allows to create graphical and text items to position on the virtual display board and then send to the real display board.

New Layout

On the main menu press the <new layout> button and configure the general parameters.

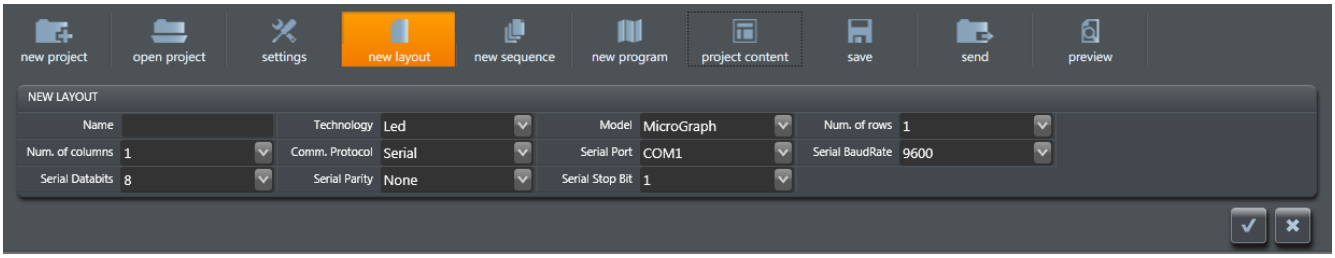


Figure 10 - New Layout parameters

Name: The Layout name becomes the name of the file where it is stored; apply the common rules for naming files under Windows (no special characters such as * ? / \ |, no more than 255 characters, etc.).

Type: Specify the display board type to use and more precisely the technology (LED or Pixel) and the model (MicroGraph or MicroTab). CAUTION: These are the only two pieces of information which can be changed once the layout has been created; therefore pay attention when making your choice.

Modules: Specify if the display board is single (1 row, 1 column) or in modular configuration (no. of rows x no. of columns).

Communication Insert the communication protocol and the relevant connection parameters. The Wi-Fi and (cabled) Ethernet protocols are available only for the LED display boards. The special protocol 'FileOut' allows to specify an output file, where the commands to send to the display board are stored (in binary format). It is useful for debugging the protocol or for sending command packets via third-party software.

Confirm the parameters pressing the button. If you later want to change any Layout parameters, press the <settings> button in the lower left corner.

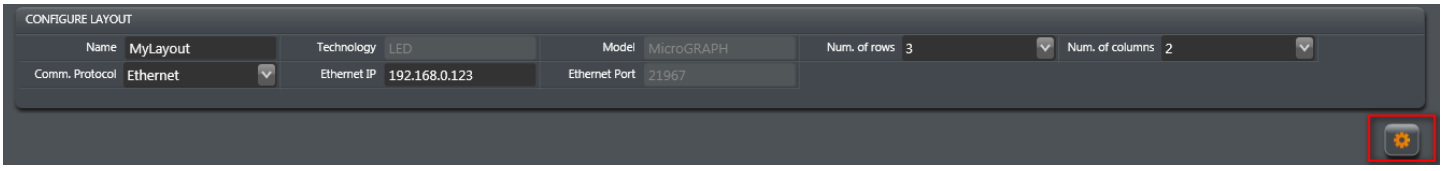


Figure 11 - Changing general Layout parameters

Positioning and Configuring Primitives

After setting the general Layout parameters, it is possible to position primitives on the virtual board of the software and change some parameters.

To do so, on the bottom toolbar, click (only once, no double-clicking or drag-and-drop) on the button of the primitive to add. The primitive is ALWAYS placed with its origin on 0,0, i.e. the top left corner of the display board. This means that if you click 3 times on the same button (e.g. <fixed text>), 3 primitives are added one on top of the other.

It is therefore recommended to add one primitive at a time, configuring and moving it into the desired position before adding others of the same type.

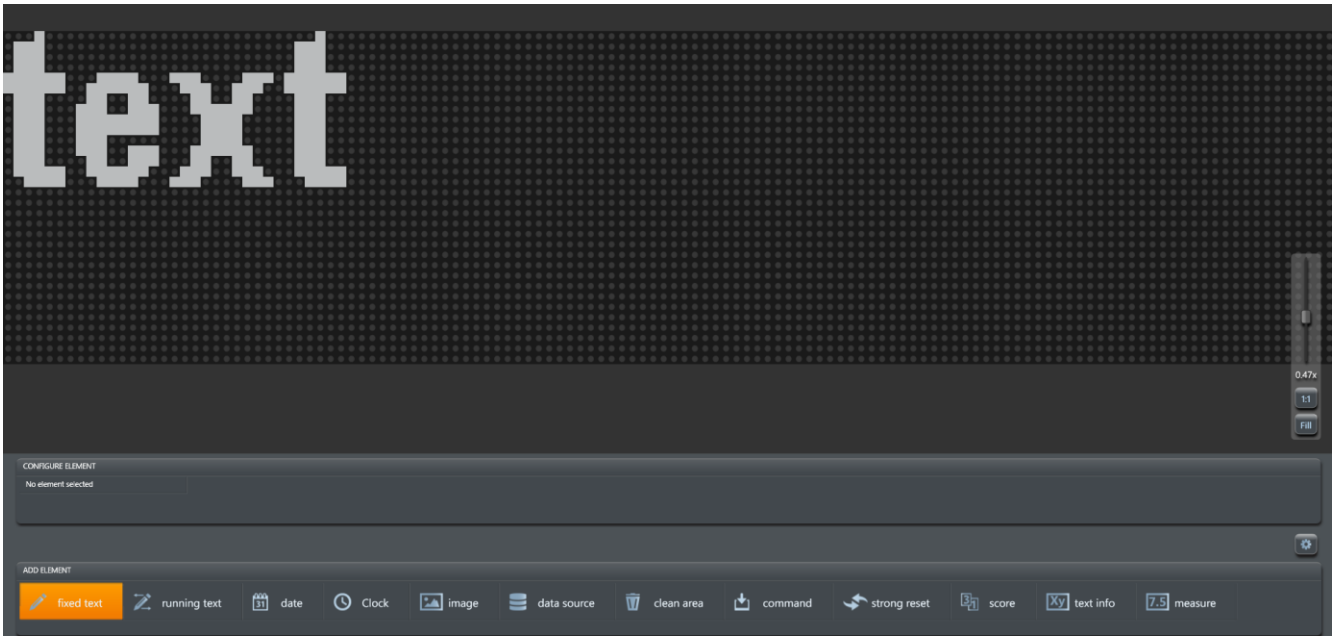


Figure 12 – Creation of a primitive

Once the primitive is created, it can be selected (with a mouse click) and moved on the virtual display board. A dotted rectangle surrounding the primitive shows the current one, referred to by the configuration panel, which opens automatically with every selection.

Figure 13 - Selection rectangle around the primitive and its configuration panel

The primitives can be moved freely using the mouse or changing their coordinates Start X and Start Y numerically (except for the MicroTab PIX display boards, which have no GRAPHICAL protocol but only an ALPHANUMERICAL protocol and therefore the primitives can be moved only by rows or columns).

Zooming the screen (or clicking on the 1:1 icon) it is anyway possible to obtain the highest precision moving dot by dot (LED or pixel).

Clicking on an EMPTY spot on the virtual board (main window), the current primitive is deselected; keeping the mouse button pressed, the cursor changes to a cross and it is possible to move (PAN) the board in the desired direction. If you have unintentionally moved the display board out of your virtual board, use the <Fill> button to make it appear again.

Figure 14 - PAN cursor and Zoom toolbar

Some primitives (date, time, running text, data source), once positioned on the virtual board of the Layout Designer, are displayed as placeholders, which show only their type and position. Subsequently, in the Preview module, once the Run mode has been entered with the <play> button, the primitive changes assuming its real appearance.

Figure 15 - Primitives in Design Mode

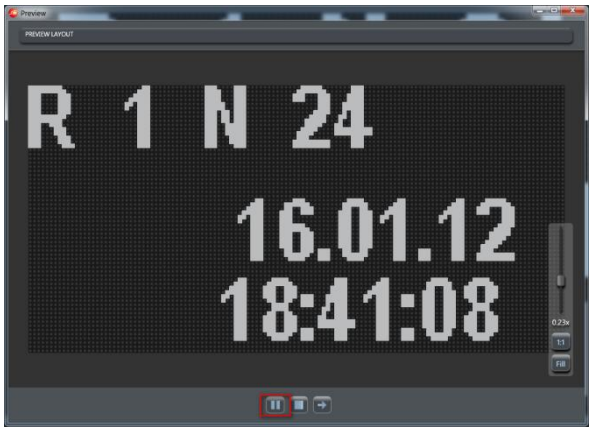
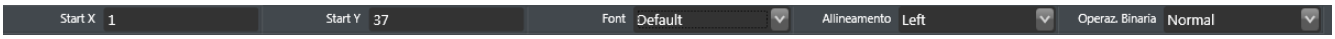


Figure 16 - Primitives in Run Mode

General Properties of Graphical Primitives

All primitives (on display boards supporting the graphical protocol, i.e. LED display boards and MicroGraph PIX) have the following properties:



Origin Coordinates

The StartX and StartY properties identify the primitive's position with respect to its point of origin. This point depends on the alignment property (see below).

Font

9 different fonts are available:

- **Default**: the font set as standard on the display board. In the .netBoards software it is always represented as Medium Proportional, but on the display board it can be set to another font.
- **Medium Proportional and Fixed**: these are two medium-size fonts, the former with proportional-width characters (e.g. W takes up more space than I), whereas the latter has fixed-width characters (like `Courier` in Windows, useful for tabulating names and numbers).
- **Small, Large**: available only in MicroGraph and are one small-size font (1/3 of display boards) and one large-size font (1/1 of the display board).
- **Narrow**: available only in MicroTab LED display boards and is a very narrow font, useful when tight strings are required.
- **Special and Special2**: are only numeric fonts for particular applications and used for backward compatibility with some timers. On MicroGraph display boards, Special2 is a full-size font (32 points high), whereas Special has an empty last LED file to allow multiple-row management.
- **Unicode Medium and Large**: equivalent of the Medium Proportional and Large but containing all Chinese (over 26,000), Japanese, Greek, and Cyrillic characters.

Figure 17 - Font examples: small, medium prop, medium fix, large, special1, special2, unicode medium and unicode large

Alignment

Allows to change a primitive's point of origin. The default alignment (Left) indicates that the point of origin is in the top left corner, whereas Right is in the top right corner, and Center at the top but centered with respect to the complete space used.

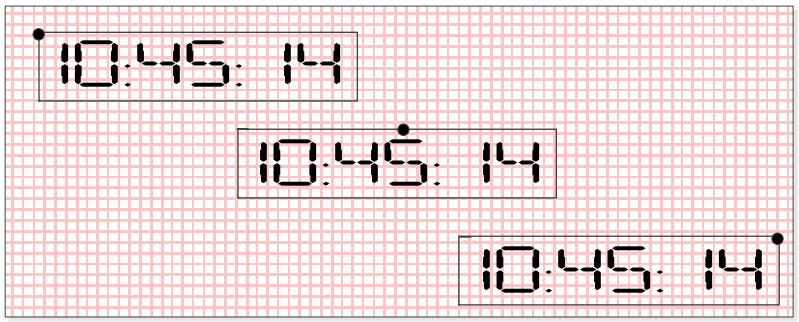
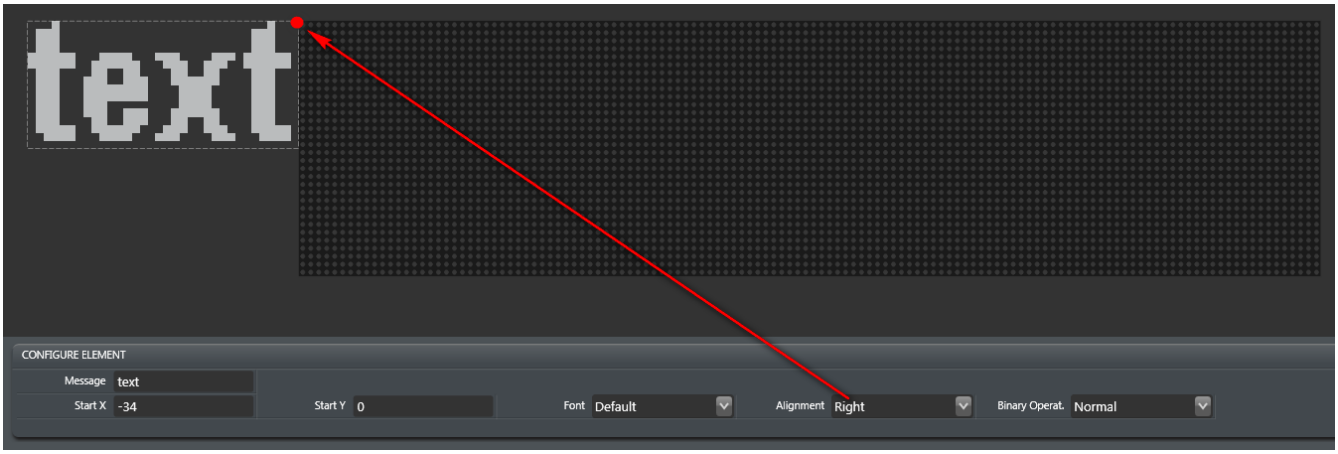


Figure 18 - Examples of left, center, and right alignment

CAUTION: choosing the RIGHT alignment of a primitive having the coordinates 0,0, the primitive is positioned OUTSIDE the display board and is not displayed on the real display board. Once the alignment is changed, position the primitive again correctly.



Binary Operation

Allows to specify a binary LED/pixel design mode different from the normal one. Not, And, Or, and Xor operations are possible. The same operations can furthermore be matched with the flag 'Don't Update' (for compatibility with pixel display boards), which allows to send a given number of elements to the display board and update only at the end.

Specifying NOT, the point color is inverted. This is useful for instance in combination with the primitive 'Clean Area' for drawing solid rectangles. Binary operations are NOT displayed by the software (not even in the Preview module), but only on the real display boards.

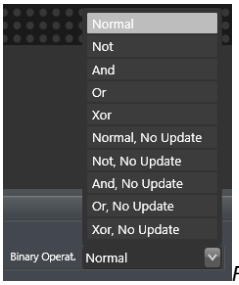


Figure 19 - Binary operations

Positioning Properties of Alphanumerical Primitives

The display board MicroTab PIC has no graphical features. The primitives are positioned specifying the row (from A to Q) and the column (from 0 to 99). The number of pixels in a column is defined as width of the SPACE character (' ') in the font set as default on the display board. In the example below it is 6 pixels.

Figure 20 - Discrete positioning by rows or columns

Unicode and Special Characters

The fonts Small, Medium (proportional and fixed), Large and Narrow contain the standard ASCII character set, as well as the ISO8859 set containing some special characters (e.g. ©, ®, currency values such as €, £, etc.) and the extended characters used by some European alphabets (for example Italian letters with accents áàéè, German letters with Umlaut äöü, etc.)

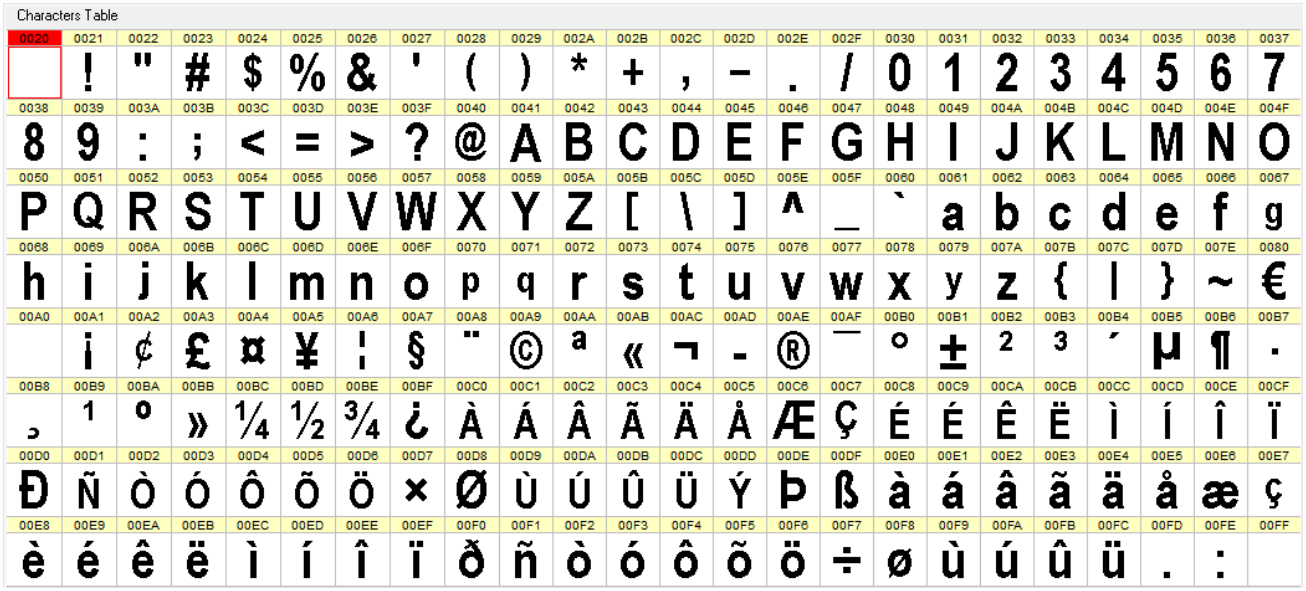


Figure 21 - Standard font character map

There are 3 special characters (00FD, 00FE, and 00FF), which have been re-mapped for containing two punctuation marks (. and :), and a space with a number of dots different from the standard number (which is usually the same as the one in numbers).

Example: if you write the string R 12 and R 34, one below the other using the normal space, they will be perfectly tabulated. But sometimes having such a large space can be an impediment and therefore it is possible to use the character 00FF (which is obtained pressing ALT+0255 on the keyboard) for a smaller space. In the text box, where this special character is inserted, a 'ÿ' appears, but on the virtual board and on the display board a space will be shown. The other two alternative characters (. e :), which can be obtained with ALT+02353 and ALT+0254 vary depending on the font and on the display board (in some cases they are the same as their normal corresponding character and in others they are a different width).

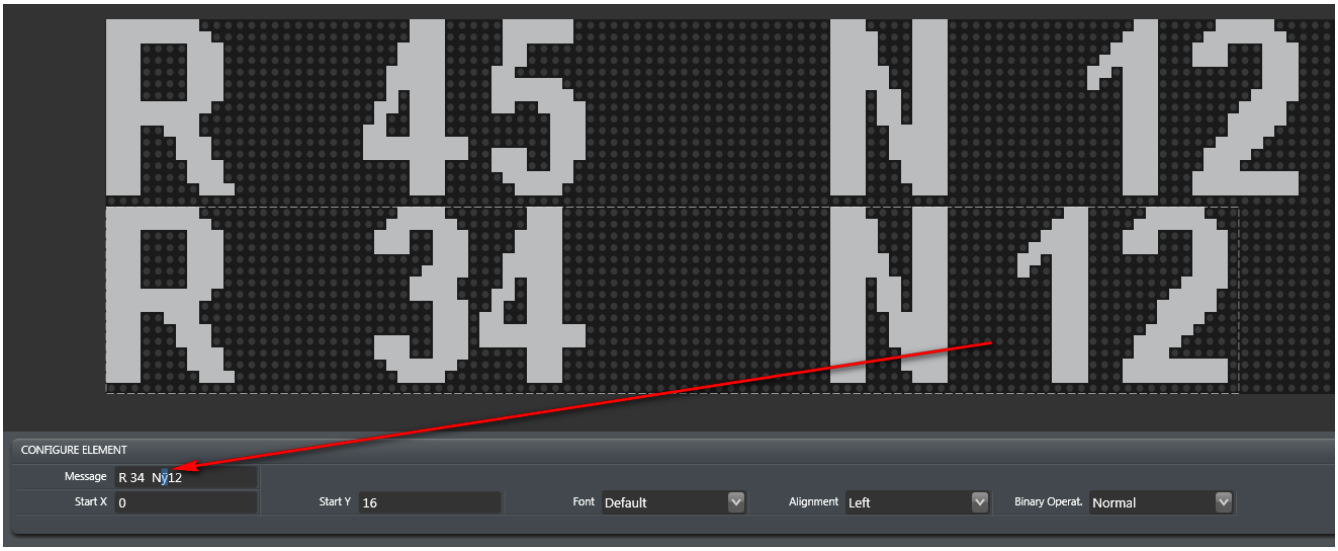


Figure 22 - Inserting the space 00FF

There are two special fonts (only for LED display boards), containing a vast range of characters to be used for a broad variety of East European and Asian alphabets.

The two fonts Unicode Medium and Unicode Large contain the following range:

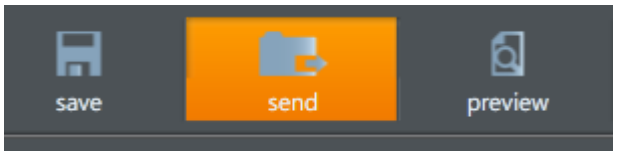
Range	Name	Description
0020-00FF	Basic Latin Latin1 Supplemental	Set ASCII + ISO8859 as described for the previous fonts
0370-03FF	Basic Greek Greek Symbols	Greek alphabet symbols
0400-04FF	Cyrillic	Cyrillic alphabet symbols
0600-06FF	Arabic	Arabic alphabet symbols
20A0-20CF	Currency	Symbols for currencies
2F00-2FDF	Kangxi Radicals	Japanese ideograms (Kanji)
3000-303F	CJK Symbols	Symbols and punctuation marks for Chinese ideograms
3040-309F	Hiragana	Japanese ideograms (Hiragana)
30A0-30FF	Katakana	Japanese ideograms (Katakana)
4E00-9FFF	CJK Ideograph	Chinese ideograms (traditional and simplified)

To insert these characters into the configuration panel of the primitive (e.g. a fixed or running text), use the functions copy / paste, Unicode combinations (ALT+NNNN), the tool 'Character Map', or the IME (Input Method Editor) in Windows or the keyboard after having activated the keyboard layout of the required language.

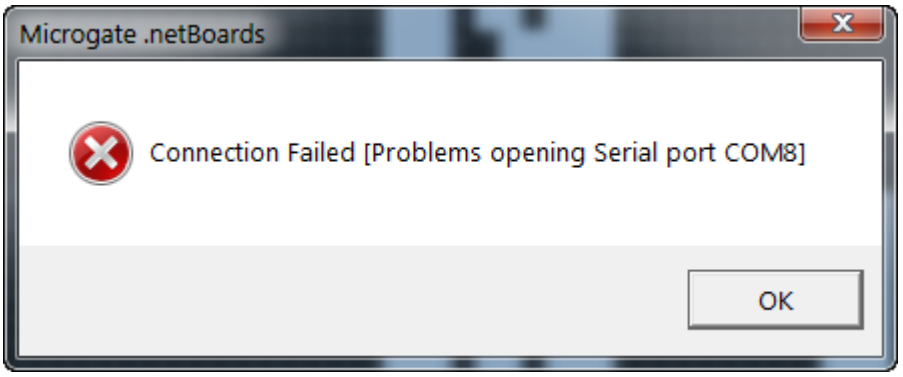
Figure 23 - Inserting Unicode strings

Sending Data to the Display Board

Each time you want to send the content of a Layout to the real display board, press the <send> button on the main menu bar.



The layout is sent and displayed immediately. In case of problems, a dialog box reports the error that has occurred.

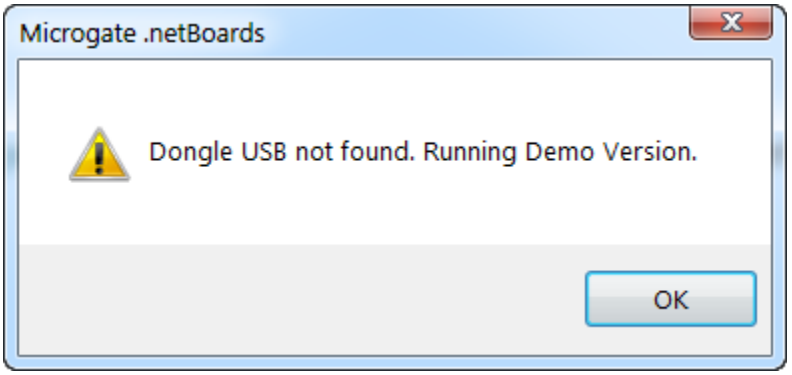


Make sure that the serial or Ethernet cable is connected properly and that the layout connection parameters have been configured correctly. In particular verify that the transmission speed (BaudRate) is set to the same value on the software and on the display board (default 9600 for MicroGraph and 1200 for MicroTab).

If problems occur with the Ethernet connection (cable or Wi-Fi), make sure that the set IP is correct. Use the ping DOS command (e.g. c:\>ping 192.168.0.123) to verify if the display board responds and is online.

The only primitive on the toolbar which does not need the <send> command is the 'Strong Reset', which is sent immediately and resets the display board (but NOT the virtual board).

The command is disabled, if no Protection Dongle is detected.



Preview

If instead of sending immediately you prefer to have a more realistic preview of the layout than offered by the virtual board (e.g. showing the time, real data, moving running texts, data sources in action, etc.), click on the the <preview> button on the menu bar which opens a second window on top of the current one. The preview window is 'modal', i.e. until you close it (clicking on the X in the top right corner), it is not possible to go back to the main window.

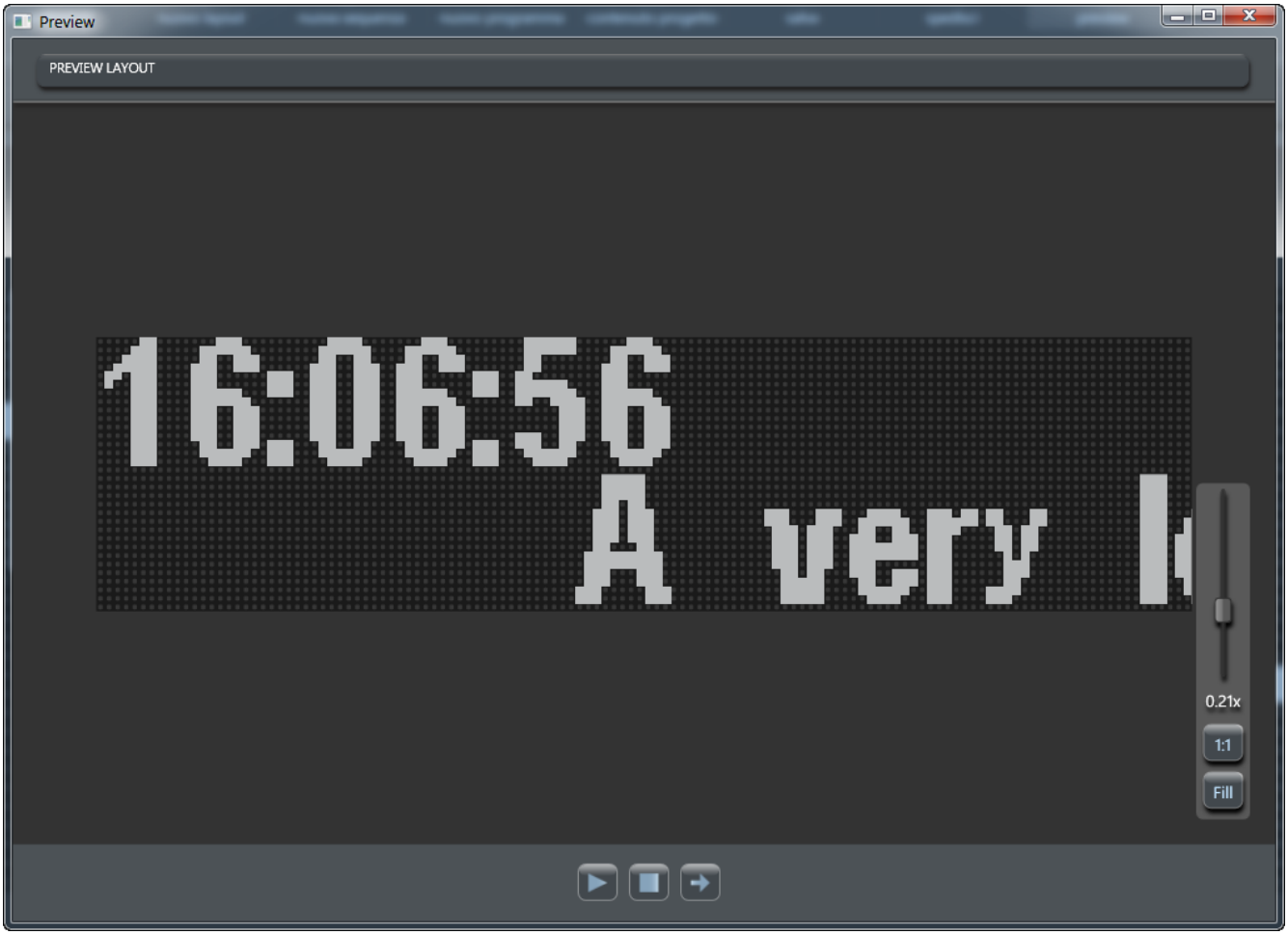


Figure 24 – Preview window

The available commands are:

	Play: Plays the preview (time runs and running texts move, data sources begin to listen on the ports set, and information is displayed).
	Pause: Pauses the preview (time stops, but is not reset, texts stop, etc.).
	Stop: Stops the Preview (time is stopped and reset, texts are on the point of origin, servers are no longer listening to source data).
	Send: Turns the transmission to the display board on/off (orange = communication open, gray = closed).

Graphical Primitives

The graphical primitives available for LED display boards and MicroGraph PIX are listed below. For each primitive the specific properties are listed, omitting the general properties contained in the paragraph 'General Properties of Graphical Primitives'.

Fixed Text

Inserts a text string.

Properties	Type	Description
Message	String	Text to write

Running Text

Allows to insert a text string running from right to left. The combination of delay and pixel shift determines the running speed.

Properties	Type	Description
Message	String	Text to write
Delay	Numerical	Delay (expressed in hundredths of a second) set for running; the lower the number (minimum 20 hundredths), the faster the text runs.
Pixel Shift	Numerical	Number of pixels the text is shifted. The higher the number, the faster the text runs (but fluidity worsens).
Width	Numerical	Number of dots of the imaginary rectangle within which the text moves.

Date

Inserts the current date (or the date set on the display board via the Set Date command).

NB: In the Preview module the date displayed is always the current date of the internal PC clock, even though on the display board another date is set.

Properties	Type	Description
Format	Lookup	Disable (deletes a previously set date on the display board) DD.MM.YYYY (18.01.2012) DD MM YYYY (18 Jan 2012)

Time / Time 2

Inserts the current time (or the time set on the display board via the command Set Time).

NB: In the Preview module the date displayed is always the current time of the internal PC clock, even though on the display board another date is set.

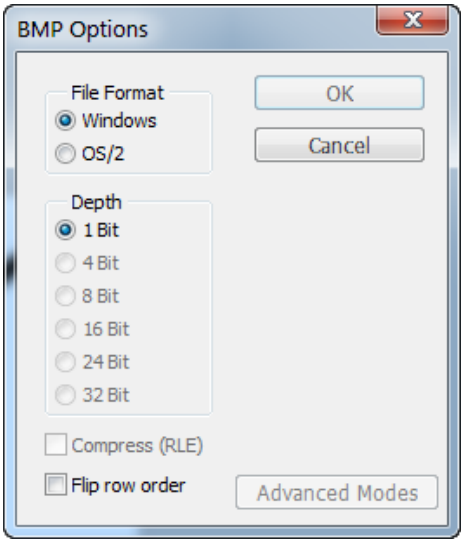
Time 2 is available only on pixel display boards (1=Internal Clock, 2=Real Time Clock) and allows to have two different times set.

Properties	Type	Description
Format	Lookup	Disable (stops and deletes on the display board a previously set time) HH:MM:SS (14:49:03) MM:SS (49:03) HH:MM 24h (14:49) HH:MM 12h (2:49)
Delay	Numerical (ms)	Allows to set a time forward or backward of a certain number of milliseconds.

Image

Inserts an image in monochromatic bitmap format (1 bit). The file must necessarily have this format. Besides the file size in pixels, it must also match the display board size, as no resizing is performed (e.g. on a single MicroGraph LED the image size can be no more than 128x32 pixels). Any already existing images can be displayed in monochrome and/or resized and saved in the correct format using the Paint program installed on any Windows system or using more sophisticated programs such as Adobe Photoshop. You can also download the Microgate utility called BitmapConverter from the following address: http://www.microgate.it/Timing/Supporto/Software

Properties	Type	Description
Path	String	Complete path (folder + file name) of the image.



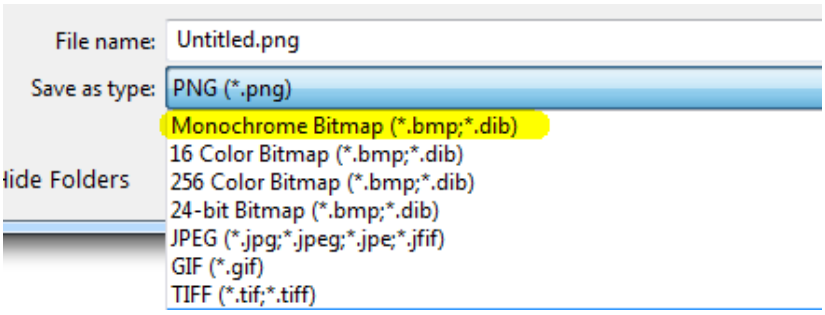


Figure 25 - Formats for saving in Photoshop (left) and in Paint (above)

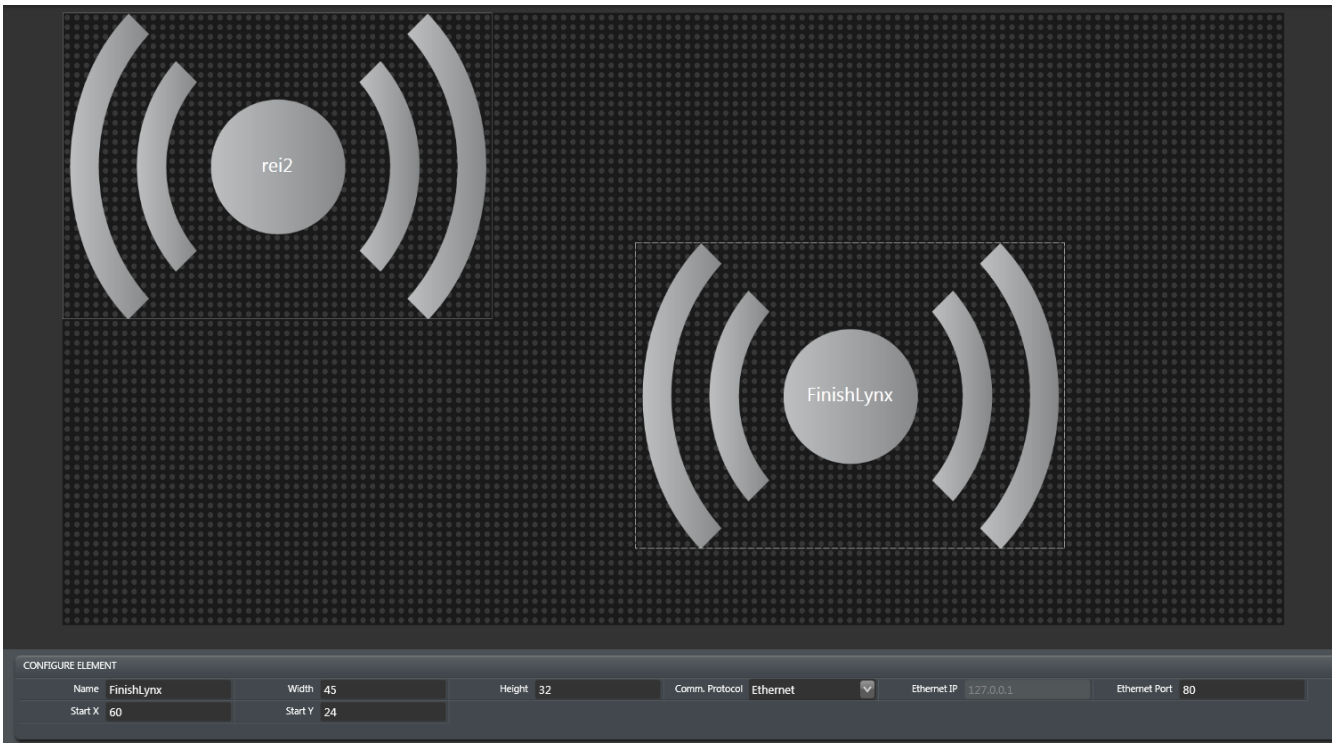
Figure 26 - Bitmap file example

Data Source

Insert a fictitious primitive, represented by the image ((O)), identifying a listening area for a data source communicating with the Microgate display board protocol (e.g. Rei2 timer, Lynx photo-finish, MiSpeaker competition management software, etc.).

After having positioned the primitive, you can launch the listening server in the preview module (using <play>). All commands sent by the connected devices (there can be more than one) are shown in preview and optionally transmitted to the connected display board.

NB: In this .netBoards software version no shifting or resizing operations are carried out on data received from the data sources. They are displayed and forwarded to the display boards as they are received, regardless of the position and size of the Data Source primitive. Future versions will include the implementation of a shifter/cropper. On LED display boards the .netBoards software does not support the 'MicroGraph PIX Simulation'; therefore it can happen that, if on the display board the flag is set to ON, the data displayed in the preview and on the display board do not match.



Properties	Type	Description
Name	String	Mnemonic name for recognizing the data sources on the virtual board.
Protocol	Lookup	Serial | Ethernet
Parameters Connection		If Serial -> COMn Port, Baudrate, DataBits, Parity, Stop bit If Ethernet -> TCP Port listening (IP is the PC, i.e. always 127.0.0.1)
Width Height	Numerical	Size of the data source rectangle (at present not used)

Clean Area

Cleans the display board area. If the binary operation is set to NOT, instead of being deleted all the dots are turned on (the primitive becomes a sort of rectangle).

Properties	Type	Description
Width	Numerical	Rectangle width in dots
Height	Numerical	Rectangle width in dots

Command

Opens the panel of available commands for the current display board model. A list and detailed explanation can be found in the paragraph 'Commands'.

Strong Reset

Sends the 'Strong Reset' command to the display board, keeping the virtual board unchanged. The command deletes all primitives, stops and disables all active objects (date, time, running texts). No configuration parameter is changed. This is not a configuration reset but a sort of 'Delete everything'. No confirmation is necessary (it is enough to repeat the <send> command to re-design the display board with all layout information).

Plug-Ins

Plug-ins are primitives which in addition to having a configuration panel like other primitives, in the Preview module they can be controlled using buttons, text boxes, etc. This allows a more precise and rapid on-the-fly change of scores, measures, athlete names, etc. The information is updated and sent to the display board on the fly, without the need for pressing the <send> command (and regardless of the status of the <send> Button.

For instance, the 'Score' plug-in of the Designer board is a simple number with the same properties of a fixed text. In Preview mode there are 2 buttons (+ and -) for quickly increasing and decreasing a value and immediately sending it to the display board.

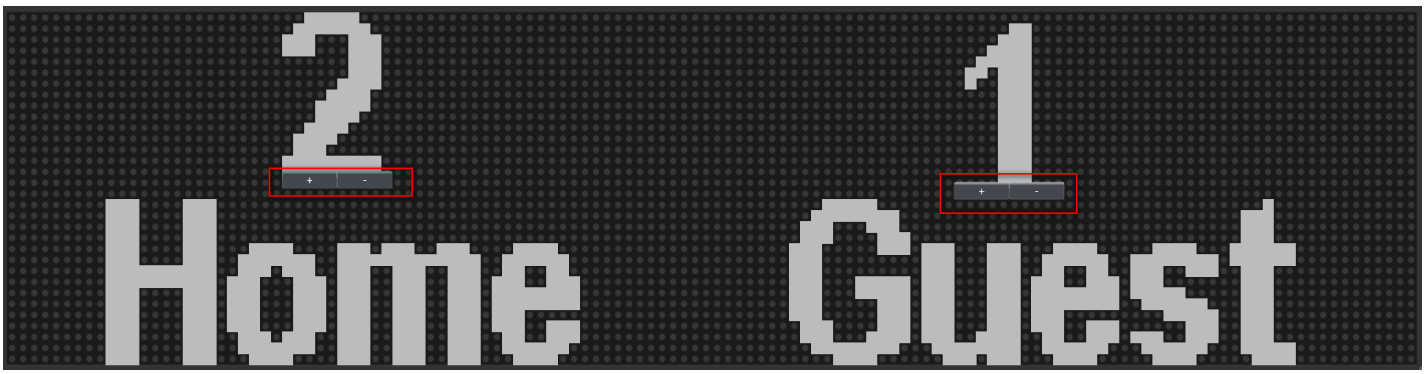


Figure 27 - Score plug-in in the Preview module

Score

Whole number with two buttons (+ and -) for increasing and decreasing the value. It is used to create score templates for sports such as soccer, basketball, volleyball, etc.

Text Info

Plug-in for quickly editing a general text, for example an athlete's name (e.g. the name of a player who must sit a penalty or his jersey number, etc.).

Measure

Similar to Text Info but only for decimals (e.g. 7.58). Can be used for instance for measuring long jumps, javelin throws, etc. N.B.: The use of , or . as decimal separators depends on the regional settings of Windows.

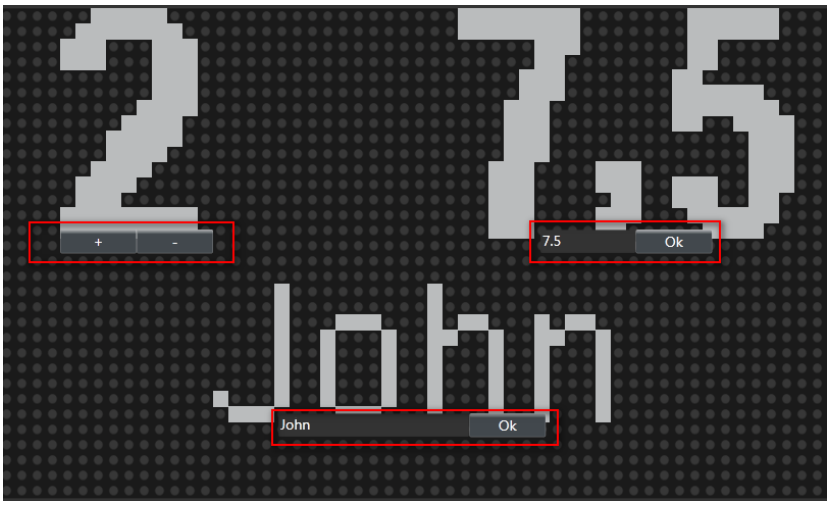


Figure 28 - Score, Measure and Text Info

Commands

Commands which can be sent to the display boards are configuration changes with settings which can be set using display board menus (keeping pressed the yellow Lap/Reset key). For example settings of date and internal time, communication parameters (radio channel, serial port baudrate, IP setting, etc.).

Pressing the < command> button on the primitives toolbar, the relevant panel is opened. After having chosen one of the commands available in the first drop-down list, the configuration panel below is displayed with the required parameters. Pressing the confirmation button , the command is sent immediately to the display board (without the need for pressing <send> on the top bar), whereas cancels the operation and closes the panel.

For some commands, the parameters contain the row address (from 'A' to 'Q'), even though the display board also implements the graphical protocol. Activating the 'All' option, the command is sent to all modules.

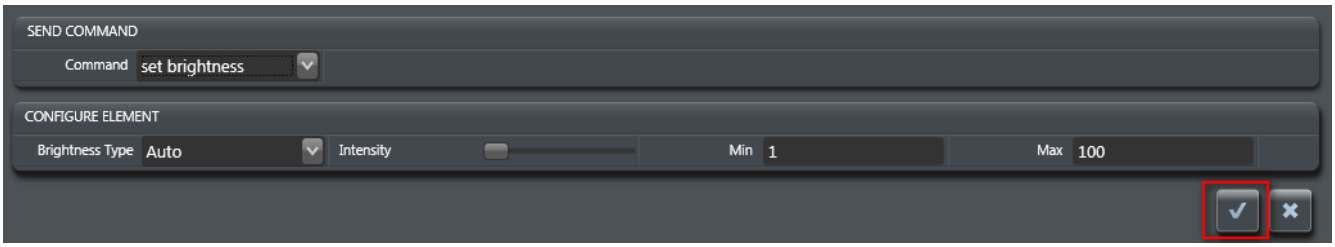


Figure 29 – Command panel

General Commands

Set Date

Sets the internal date of the display board. Indicate the date using the format DD/MM/YY using the calendar control.

Set Time

Sets the internal clock of the display board. Indicate the time using the format HH:MM:SS.cc

Pause

Sets a pause of a given number of hundredths of a second during which the display board stops its activity.

Strong Reset

Performs a Strong Reset. Corresponds to the pressing of the button on the primitives toolbar.

Weak Reset

Performs a Weak Reset. This is different from the previous reset and any pauses, which must be executed completely (whereas the strong reset interrupts them).

Execute Program

Executes the internal hardware program of the display board. Choose the program to execute from the drop-down list.

Disable Active Object

An 'Active Object' is any predefined element (clock, date, running text), which is updated automatically by the graphical display board, without the need for a PC-commanded 'refresh'. The command 'blocks' the object on the coordinates set in the parameters.

Stop Running Text

Similar to the above, but relating only to running texts and MicroTab Pix display boards. Instead of the coordinates X,Y, the row, where the text is located, must be indicated.

Commands of LED Display Boards

Enable MicroGraph PIX Simulation

Enables and disables the PIX Simulation. For reasons of compatibility with pixel display boards, the MicroGraph display board can simulate its corresponding PIX display board by remapping the smaller surface (96 pixels) with its 128 LEDs. It must be used in combination with the transmission of timers or other devices which do not have yet drivers for LED display boards.

Set Radio Channel

Sets the Linkgate radio channel (from 0 to 128).

Set Brightness

Sets parameters for brightness adjustment.

Type:	Auto (uses the brightness sensor setting values within the defined Min-Max range)
	Manual (uses the value set with the 'Intensity' slider)
Intensity	Value from 1 to 100 for manual intensity
Min/Max	Minimum and maximum value for the sensor values (default 1, 60)

Set Ethernet Parameters

Sets the IP address and the TCP port of the Ethernet network card of the display board; the address must be a valid IP between 0.0.0.0 and 255.255.255.255, whereas the port must have a number between 1 and 65535. CAUTION: If you are connected with the display board via Ethernet and change these parameters, the connection is lost and you will have to change the configuration of the current layout.

Set Wifi Parameters

Sets the parameters of the Wi-Fi network card of the display board (if present). For the IP address and the TCP port the same considerations above apply. The Wi-Fi card can be enabled and disabled, and the SSID (network name) and password (key) of the Wi-Fi network, to which you want to connect to, can be set. The used security protocol is WPA.

Set Baudrate

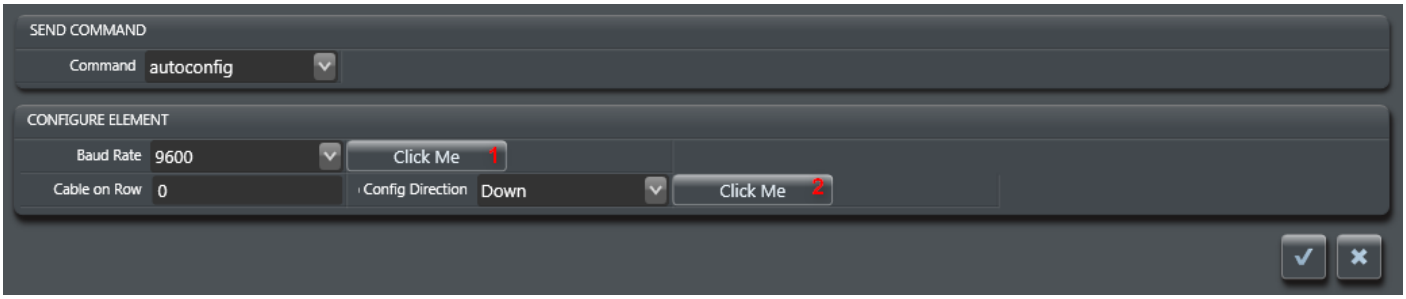
Sets the speed of the serial port of the display board (usually 1200 for MicroTab and 9600 for MicroGraph). **CAUTION**: If you are connected with the display board via serial port and change this parameter, the connection is lost and you will have to change the configuration of the current layout.

AutoConfig

In case of modular multiple-display board configurations, the row and column address can be set beforehand (before merging them) in the setup menu. Or (if you have forgotten or mounted the modules wrongly), use these commands, which autoconfigure everything.

First of all the speed for INTERNAL transmissions (usually 9600) between display boards must be set to same value for all display boards. Press <Click Me> and WAIT until all display boards read 'Init Auto Config OK'.

Then indicate the row number you want to obtain on the display board connected with the PC via the connection cable and if the configuration direction must be from bottom to top (UP) or viceversa (DOWN). press >Click Me>.



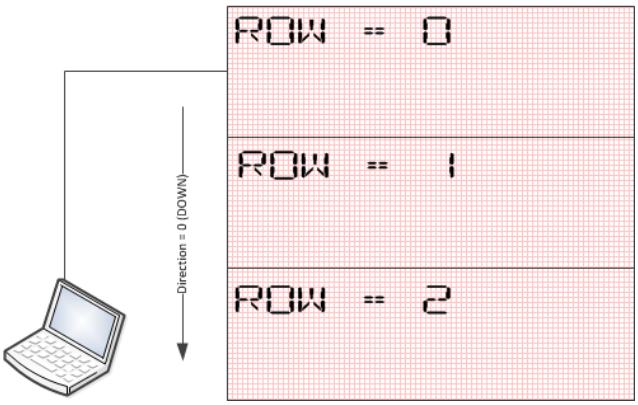


Figure 30 - Down

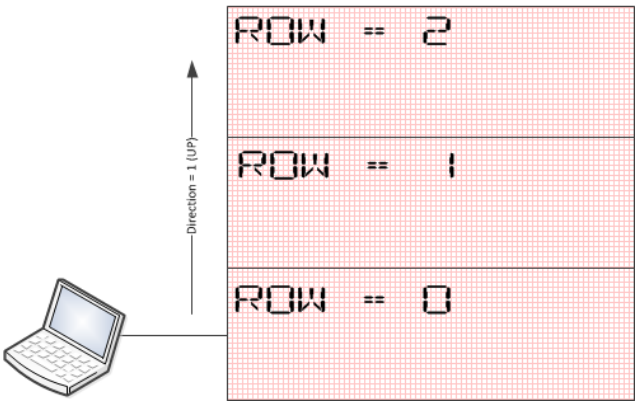


Figure 31 - Up

Identify me

After performing the AutoConfiguration explained above, this command can be sent to verify if all rows and columns have been set correctly. The display boards display each one its index of rows and columns.

Alphanumerical Primitives

The list below lists all alphanumerical primitives available for pixel display boards. For each primitive the specific properties are listed, omitting the general properties (row and column) described in the paragraph 'Positioning Properties of Alphanumerical Primitives'.

Fixed Text

Inserts a text string.

Properties	Type	Description
Message	String	Text to write

Running Text

Allows to insert a text string running from right to left.

Properties	Type	Description
Message	String	Text to write
Delay	Numerical.	Delay (expressed in hundredths of a second) set for running; the lower the number (minimum 20 hundredths), the faster the text runs.
Involved Columns	Numerical	Width in columns of the imaginary rectangle within which the text moves.

Date

Inserts the current date (or the date set on the display board via the command Set Date).

NB: In the Preview module the date displayed is always the current date of the internal PC clock, even though on the display board another date is set

Properties	Type	Description
Format	Lookup	Disable (deletes a previously set date on the display board) DD.MM.YYYY (18.01.2012) DD MM YYYY (18 Jan 2012)

Time / Time 2

Inserts the current time (or the time set on the display board via the command Set Time).

NB: In the Preview module the date displayed is always the current time of the internal PC clock, even though on the display board another date is set

Time 2 is available only on pixel display boards (1=Internal Clock, 2=Real Time Clock) and allows to have two different times set.

Properties	Type	Description
Format	Lookup	Disable (stops and deletes on the display board a previously set time) HH:MM:SS (14:49:03) MM:SS (49:03) HH:MM 24h (14:49) HH:MM 12h (2:49)

Command

Opens the panel of available commands for the current display board model. A list and detailed explanation can be found in the paragraph 'Commands'.

Strong Reset

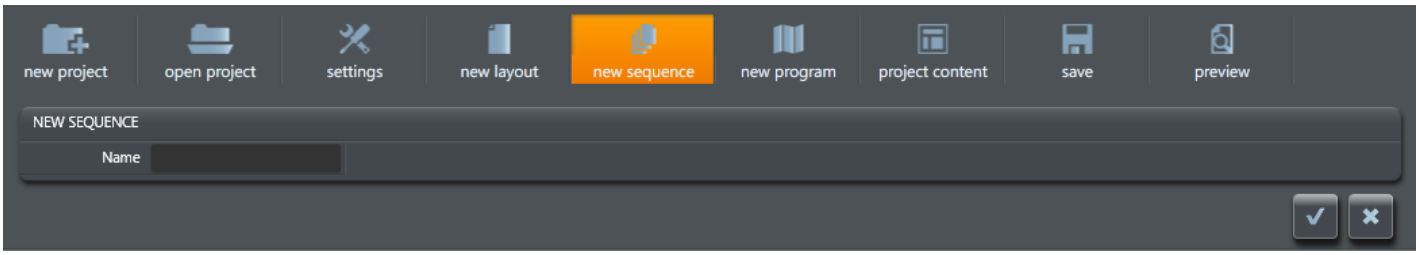
Sends the command 'Strong Reset' to the display board, keeping the virtual board unchanged. The command deletes all primitives, stops and disables all active objects (date, time, running texts). No configuration parameter is changed. This is not a configuration reset but a sort of 'Delete everything'. No confirmation is necessary (it is enough to repeat the <send> to command re-design the display board with all layout information).

Sequence Editor

A sequence is a list of layouts previously created, which are sent one after the other to the display board and which are displayed for a certain number of seconds. It is furthermore possible to create cycles to execute the sequence for a given number of times.

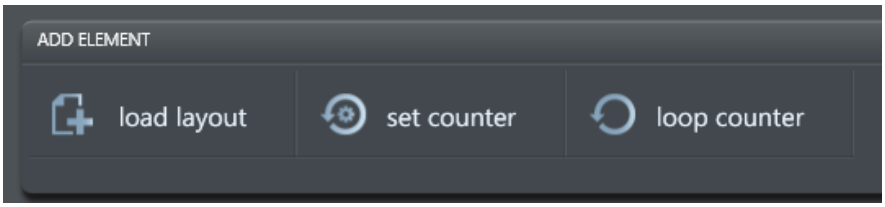
New Sequence

Press <new sequence> on the main menu and indicate the name of the sequence, confirming with the . button. Like for the layout, the name must correspond to the standards for file names in Windows.



The parameters for connection with the display board to send the data to are inherited from the layout; therefore check that these are correct, if nothing is displayed.

The commands available for creating/managing a sequence are:



Load Layout

Click the <load layout> button and a first item with the row number 1 is created in the main window. Click on the list and from the element configuration panel edit the name of the layout to load, as well as the number of seconds all data must be displayed. Repeat to create other layouts.

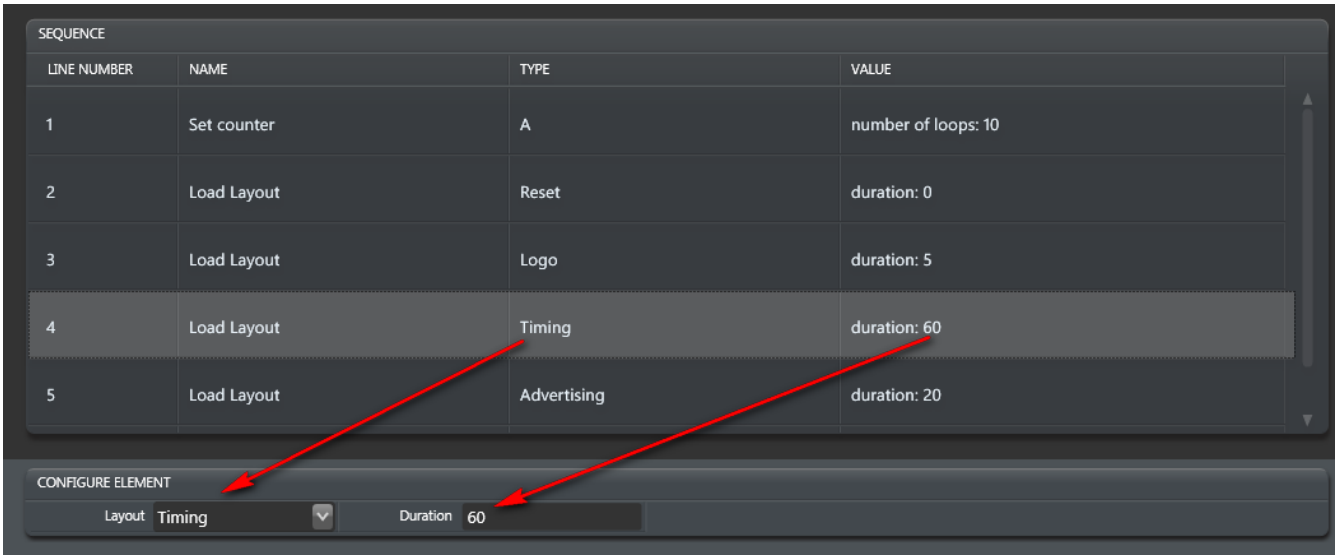


Figure 32 - Window for adding items to the sequence

An element can be removed by simply clicking on it (it becomes orange) and pressing the DEL key.

To move an element before or after another element (changing the sequence), select and drag it into the desired position. e.g. move row 3 placing it between 1 and 2.

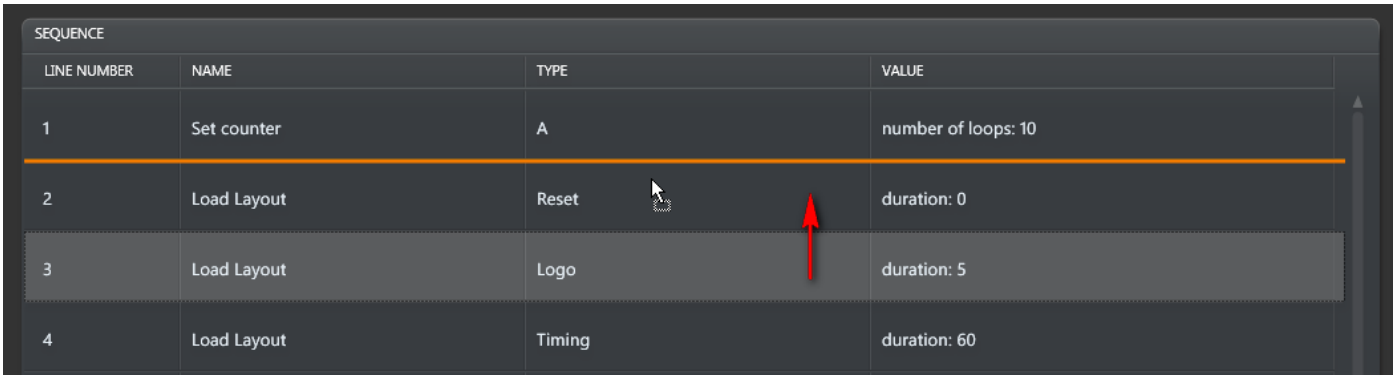


Figure 33 - Drag and drop operation moving one element higher in the list

Set Counter and Loop Counter

It is possible to set up to two nested loop cycles, which are executed for a given number of times.

Example 1: Execute the sequence loading three layouts 10 times.

- Counter A
  - Load Layout 1
  - Load Layout 2
  - Load Layout 3
  - Load Layout 4
- Loop Counter A x 10 times

Example 2: Execute the external sequence 3 times and the internal sequence 5 times:

- Counter A
  - Load Layout 1
  - Set Counter B
    - Load Layout 2
    - Load Layout 3
  - Loop Counter B x 5 times
  - Load Layout 4
- Loop Counter A x 3 times and skip to row 3

To obtain this result use the <set counter> and <loop counter> commands and configure the parameters correctly (counter type A or B and number of the row to skip to).

Using the line number it is also possible to instruct not to repeat the whole cycle but to skip steps (after the first cycle).

E.g. In example 2 Layout#1 is executed only the first time, because the second and third time the cycle begins at line#3.

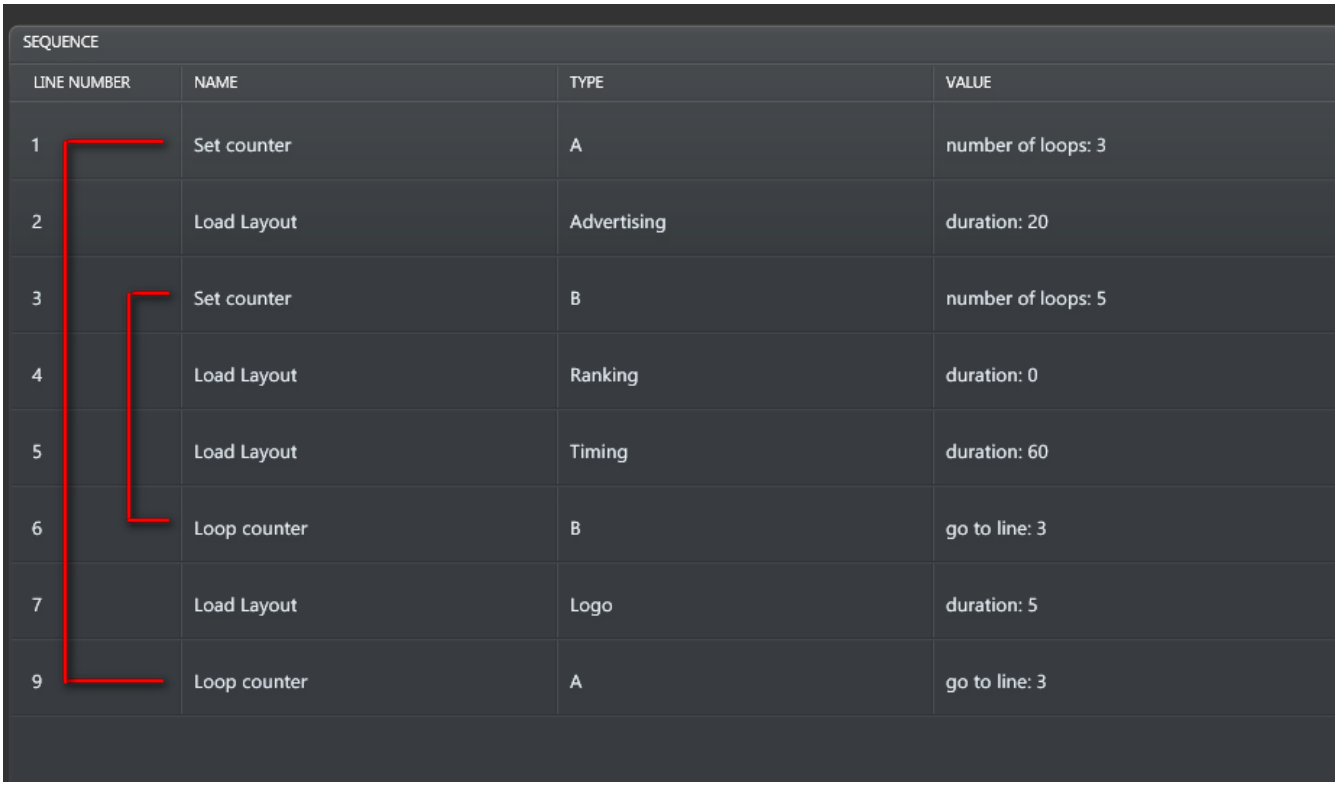


Figure 34 - Creating a sequence with double nested loop

Preview and Sending the Sequence to the Display Board

After having stored the sequence, you can preview it and send it to the display board. In some cases it can be useful to temporarily 'turn off' some layouts, which you don't want to send. To do so, deselect the checkbox in front of the layout name.

The number of seconds of the duration and the number of cycles of the loops decreases visually to allow better control of what you are doing.

The Play/Pause and Stop buttons are similar to what has been explained in the Preview paragraph.

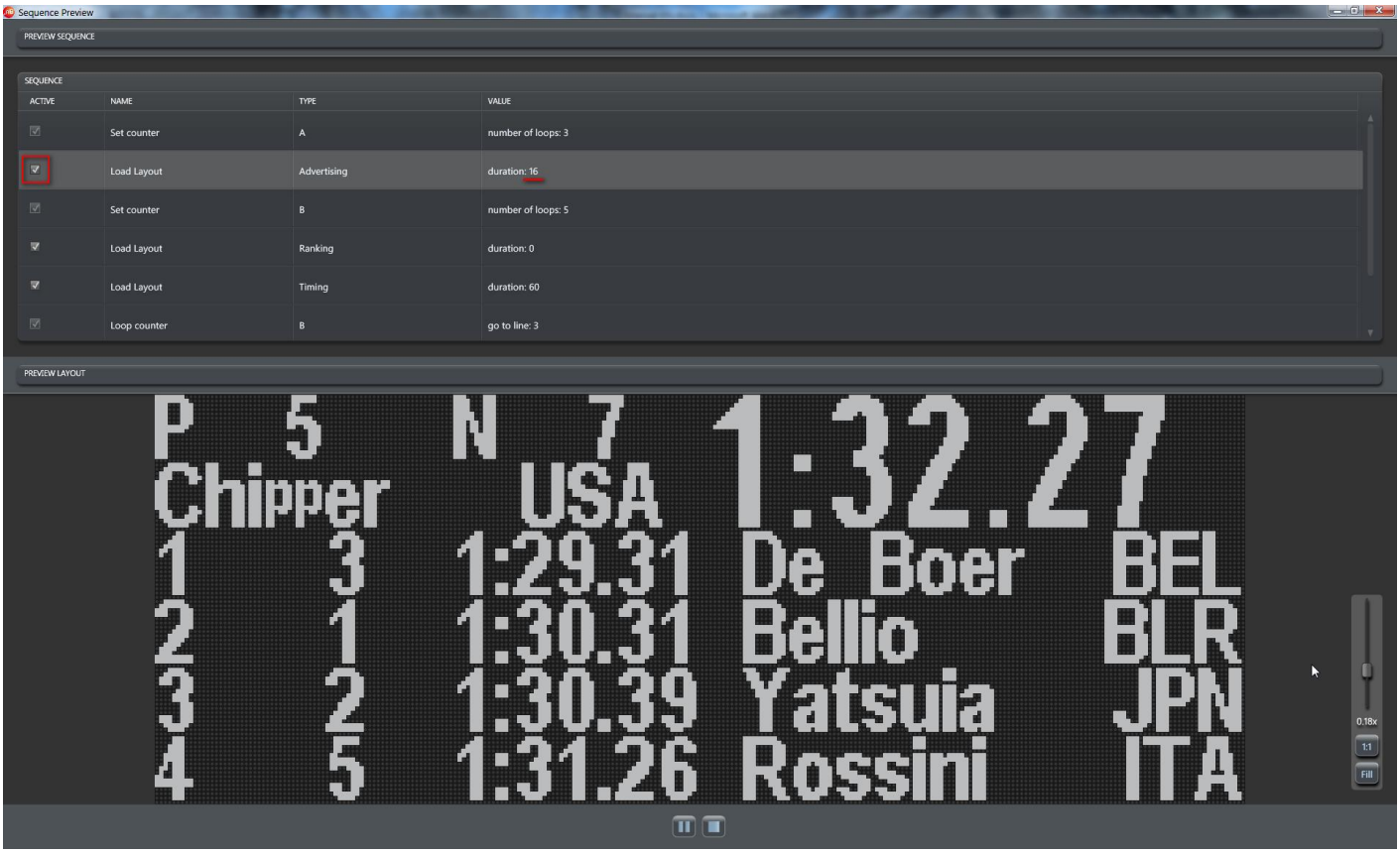
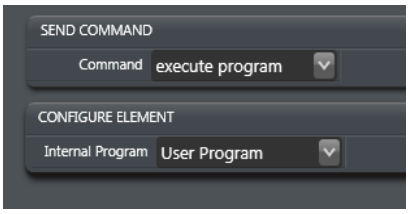


Figure 35 – Preview window for a sequence

Program Editor

An 'internal program' is the sum of commands executed in sequence directly from the display board without the use of a PC. Internal programs (or 'user programs') are created with this module, sent to the display board (that saves them in its internal memory) and executed in one of the following ways:

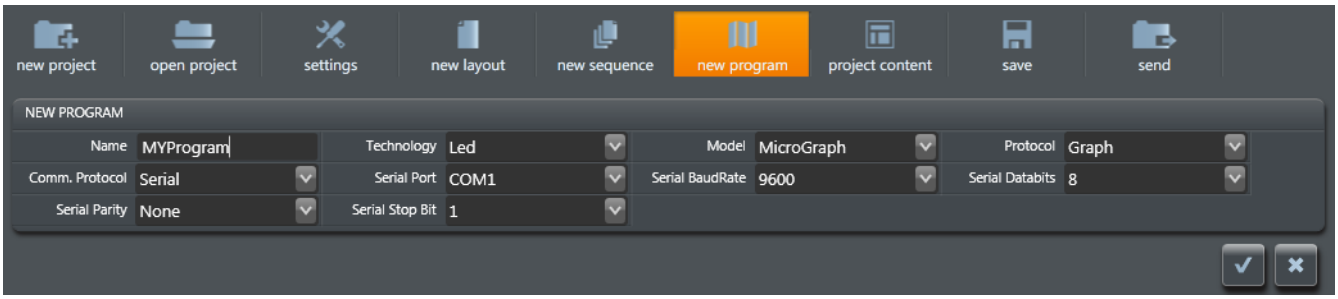
- directly from the setup menu of the display board (press the yellow Lap/Reset key for 2 seconds and with the green key choose 'Internal Prg'; please see the display board guide for further information
- using the 'play' icon in the lower right corner
- from the Layout Designer using the 'Execute Program' command and choosing 'User Program' from the drop-down list.



To write an internal program no computer language knowledge is needed. You must only put the commands you want the display board to execute one after the other using specific commands for managing cycles, unconditional skips (loop/goto) and pauses between commands.

New Program

Choose <new program> from the main menu bar, selecting a name and setting the properties for the connection with the display board the program must be sent to.



The available commands to insert into the 'program list' are very similar to those described for the Layout Designer. Clicking on each command, they are inserted into the program list and can be configured by simply clicking on them

To move (up or down) or delete a list element, proceed as explained in the previous chapter on Sequence Editor(drag and drop the element and DEL key to delete it).

Saving, Sending and Executing the List

To save and send the list to the display board after having created it, it is sufficient to press the corresponding <save> and <send> buttons on the main menu bar.

To execute and test the program just press the <play> button at the bottom.

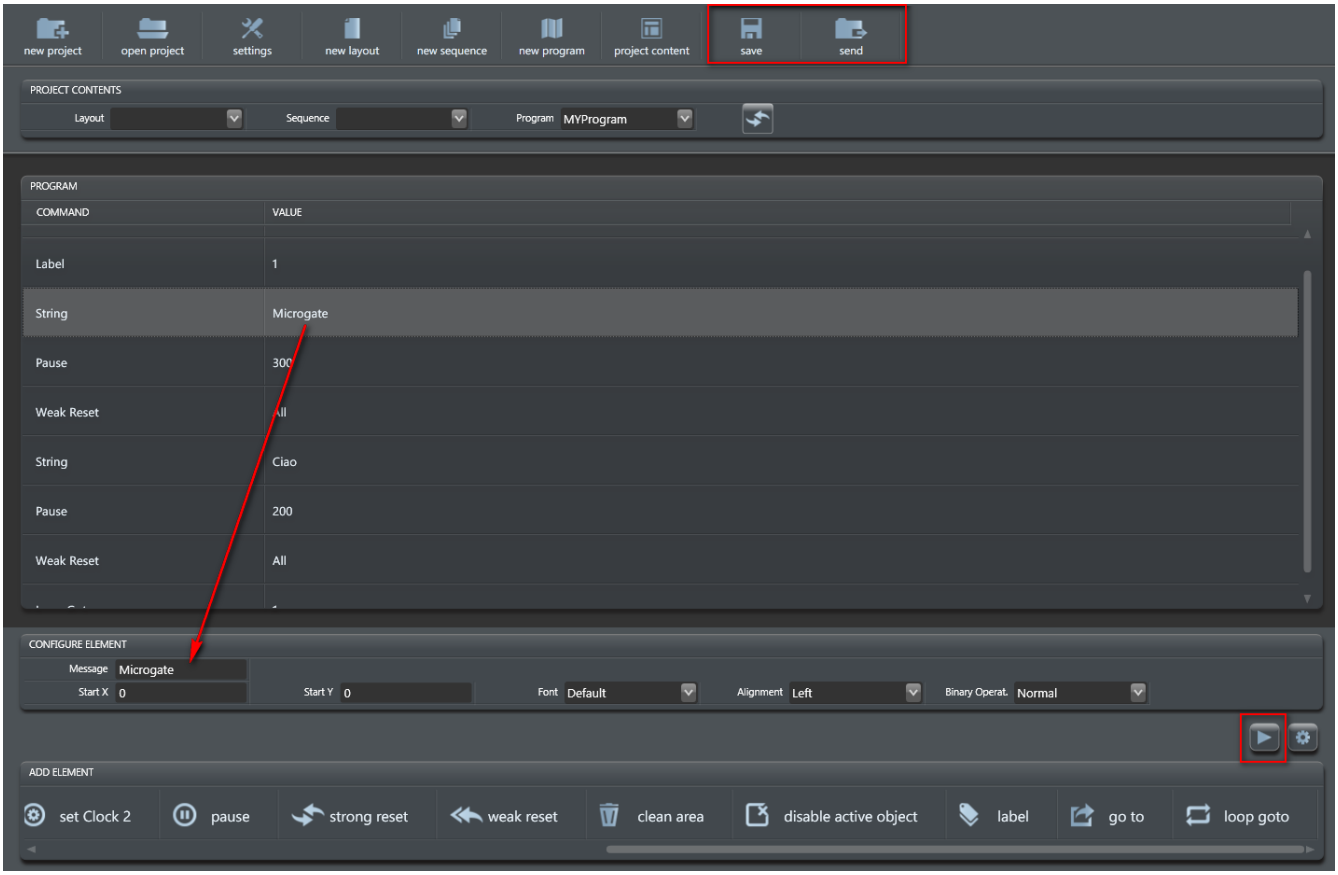


Figure 36 - Program Editor

Cycles and Skips

Manages cycles (series of operations to execute for a given number of times) or skips from a given spot of the program using the commands Label, Go to and Loop/Goto.

Label

Inserts a label numbered 0 to 9, which the commands loop or goto refer to. This means that you can execute up to 9 nested cycles or manage various spots to skip to.

Loop/Goto

Skips to the specified label and executes the cycle for a given amount of times.

Go To

Skips to the indicated label

e.g. Loop 3 times a certain number of operations

- Label '1'
  - (write string)
  - (pause)
  - Go to Label '2'
  - (..)
  - Label '2'
  - (..)
- Loop/Goto Label '1' '3' times

Pause, Reset, and Active Objects

Putting a series of commands in sequence does not make much sense if there are no pauses between them, allowing displaying and reading.

To do so there is the 'set pause' command, which pauses the display board putting it on 'stand-by' for a given number of hundredths of a second, and making it wait to execute the following command.

The only command which is 'insensitive' to the pause is 'Strong Reset', which is executed immediately. Therefore to execute the clearing of the display board between commands respecting the pause, you must use the 'Weak Reset' command. It is in any case recommended to insert a 'Strong Reset' at the beginning of the program to ensure that the display begins with an empty board.

Some commands (Display Date, Display Time, and Running String) instance on the display board so-called Active Objects. If you want to display a primitive instead of these, you must 'block' them using the 'Disable Active Object' command executed by the coordinates where it is located, or using the 'Disable' options of the Date and Time format. In case of MicroTab PIX display boards (which do not have the Disable Active Object command), it is necessary to use the 'stop running text' commands and the 'Disable' options.

Example 1

- **Strong Reset**
- Write 'Microgate'
- Wait 2 seconds (pause 200 hundredths of a second)
- **Weak Reset**
- Write 'Timing System'
- Wait 2 seconds (pause 200 hundredths of a second)
- **Weak Reset**
- …

Example 2

- Display Time in 0,0
- Wait 5 seconds (pause 500 hundredths of a second)
- **Disable Active Object** in (0,0)
- Display Date in 0,0
- …

Example 3

- Display Time format HH:MM:SS
- Wait 5 seconds (pause 500 hundredths of a second)
- Display Time format **Disable** (turns off)
- Display Date in 0,0 format DD/MM/YY
- Wait 5 seconds (pause 500 hundredths of a second)
- Display Date format **Disable** (turns off)
- Write Running String
- **Stop Running String** (mTab PIX) or **Disable Active Object** (x,y)

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